

Clay Soil Helps My Mother in the Kitchen and Conserves the Environment



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Introduction

In every month my mother used to buy three sacks of charcoal and sometimes complains that the charcoal has finished early than she expected, then I thought a lot on how I can help my mother to minimize the cost of charcoal as a fuel in the kitchen.

Me and my friend we came with the idea of using clay soil to help my mother and other users of charcoal to minimize the cost of buying it and to minimize also the resultant effects of preparing and using charcoal to our health and environment.

Method

Clay soils feel sticky when it is wet. This property of being sticky when it is wet, clay soil can hold together particles of charcoal dusts or residues to form a mass of mixture which can be rolled to form small ball-like structures which when dried will serve as fuel that last longer in the stove. Clay soil is available in our environment, just few meters from our home we can collect clay soil for our experimental purposes.

In our project the method we used to prepare the ball – like structures was mixing of clay soil and charcoal dusts or residues and observation method.

Preparation of ball –like structures

We prepared the balls by taking 0.5 litre of the wet clay soil and poured into a trough followed by 0.5 litre of charcoal dusts and mixed them thoroughly, then from the mass of the mixture we obtained many small ball-like structures which were then dried for seven days under the strong sun. Then the balls were ready for use.



Results

By assessing the effectiveness of ball –like structures of charcoal and clay mixture as compared to the normal charcoal for two days by using equal number of pieces of the two kinds of fuels in their burners, the results were recorded in the table as shown below.

The limitations of the results include:

- Quantity of charcoal dusts mixed with clay soil limits the accuracy of the experimental data charcoal should be equal to or more than clay soil during mixing
- The dryness of balls, the well dried balls show good results.



| Day 1 | | | |
|----------|--------------------------|---------------------------------|------------------|
| Fuel | Time spent to catch fire | Time taken for complete burning | Number of pieces |
| Balls | 3 min | 90 min | 8 |
| Charcoal | 1min | 30min | 8 |

| Day 2 | | | |
|----------|--------------------------|---------------------------------|------------------|
| Fuel | Time spent to catch fire | Time taken for complete burning | Number of pieces |
| Balls | 3 min | 90 min | 8 |
| Charcoal | 1min | 30min | 8 |

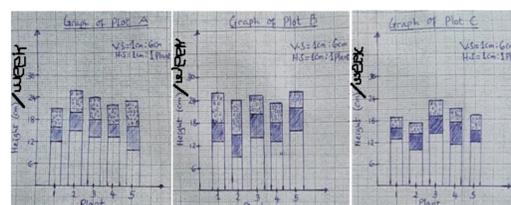


Table showing the length of 5 different cowpeas plants in plot A, B and C

| Week | Heights of 3 plants in Plot A (cm) | | | | | Heights of 3 plants in Plot B (cm) | | | | | Heights of 3 plants in Plot C (cm) | | | | |
|-----------------|------------------------------------|-----------------|-----------------|-----------------|-----------------|------------------------------------|-----------------|-----------------|-----------------|-----------------|------------------------------------|-----------------|-----------------|-----------------|-----------------|
| | 1 st | 2 nd | 3 rd | 4 th | 5 th | 1 st | 2 nd | 3 rd | 4 th | 5 th | 1 st | 2 nd | 3 rd | 4 th | 5 th |
| 1 st | 12 | 15 | 13 | 13 | 10 | 13 | 9 | 14 | 13 | 16 | 13 | 10 | 14 | 11 | 12 |
| 2 nd | 16 | 20 | 18 | 17 | 16 | 18 | 15 | 20 | 18 | 22 | 16 | 14 | 19 | 17 | 15 |
| 3 rd | 21 | 26 | 24 | 22 | 23 | 26 | 24 | 25 | 23 | 26 | 19 | 17 | 23 | 21 | 19 |

Conclusion

From our findings in the project of determining the effectiveness of ball-like structures made by mixing clay soil and charcoal residues: The ball-like structures are much more effective fuel as they stay longer in the burner than normal charcoal therefore:

1. They save money that could be used to buy charcoal more often.
2. They save the environment by reducing the number of trees that can be cut to make charcoal
3. Less amount of harmful gases are produced.

My mother who has been complaining that her charcoal get finished early, I will advise her to use these balls to minimize the cost of buying charcoal, because these balls last longer in the burner. Eventually she will be conserving the environment unknowingly.

Recommendations:

- Our school garden which has been for a long time producing poor yields of crops, and the low cost of obtaining ashes, wood ashes may be recommended to be used to add some nutrients to soil. Not only to our school garden but also may be recommended to other people also
- Finally, this project is a student-based project, therefore we highly encourage other scientists to carry out more investigations on the effects of wood ashes in plant growth.

References

Internet source
[https:// www.sciencedirect.com](https://www.sciencedirect.com)
Soil science for secondary schools

Acknowledgments

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