



Producing Bases From Banana Peels

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Introduction:

Banana peelings are easily obtained as waste materials

The fruit (one finger) contains one third of it as peelings. According to the reports from the Bukoba Urban Market Supervisor, 160 tonnes of bananas are consumed per week. This produce **47 tonnes** of peelings. This amount of garbage when poorly disposed off may cause a serious terrestrial pollution. The problem of availability of chemicals in school laboratories is rampant, because of being expensive and poor economic base of many schools.

Yes, burnt banana peelings give ashes from which an alkali can be extracted. The alkali so obtained can find use both in school laboratories and elsewhere.

The aim of this project is to show how to produce alkali cheaply instead of using expensive chemicals as manufactured industrially and profitably reducing the amount of wastes disposed in the environment.



Procedure:

The work involved collecting peels, drying, burning them, dissolving ashes in clean water. This is followed by filtering using to separate undeserved part of the ashes and the solution. The filtrate is alkaline.

1. Collecting of the peelings
2. Weighing them to determine the weight before drying them.
3. Drying the peelings in the sun.
4. Weighing the dried peelings.
5. Burning the dried peelings in air.
6. Weighing the ashes obtained after it has cooled.
7. Collecting clean rain water.
8. Dissolving a known amount of ashes in a known volume of water.
9. Filtering the suspension by using a filter funnel.
10. Using standardization methods to determine the strength of the alkali obtained.

MATERIALS EQUIPMENT / APPARATUS

1. Test tubes.
2. Beakers.
3. A sensitive balance.
4. Filter funnel.
5. Filter papers.
6. Source of Heat, (fire wood or kerosene).

CHEMICALS

1. Qualitative Analysis Laboratory Chemicals.
2. Clean rain water (Distilled water).



Results:



Element	Through bunch(kg/h)	Through stem(kg/h)	Total(kg/h)	% given out by fruit
N	181	199	388	49
P	29	23	52	56
K	778	660	1438	54
Ca	101	126	227	45
Mg	49	76	125	39

Peels have a water content ranging from 61% to 70% by weight, whereby the remaining 39% to 30% produced about 10% to 15% ashes. Peels which were burnt without drying produced 6% ashes, while those burnt after drying produced 13.5% ashes.

Weight drying(kg)	Weight before drying(kg)	Weight after drying(kg)	Weight of ashes(kg)	% age of water
8	3		0.450	62.5
4			0.240	
6	2.25		0.27	62.5

Table 2: The percentage of water in the peels and amount of ashes obtained

Qualitative analysis of the sample. prove the basic nature of the ashes.

Experiments	Observations	Inference
Observation of the sample	Grey powder with some black particles	Presence of carbon
Sample shaken with water	A suspension observed which settle on standing	Sample contains soluble and insoluble parts.
Decantation followed by filtration	Colourless filtrate which turn red litmus blue, residue - greyish black.	Alkaline solution ashes containing carbon particles.
To a small amount of solution 2 drops of methyl orange were added followed by a few drops of diluted hydrochloric acid	The colour changes from yellow to red.	Neutralization reaction- reaction between base and acid.



The filtrate obtained from the solution made by shaking 66.7 g of ashes, when titrated against 0.1M hydrochloric acid appeared to be a 0.18M solution of a base. From table 1 above the base is potassium carbonate.

CONCLUSION

Banana peels when burnt produce ashes which contain bases. The base is thus produced at low cost and the process is environmental friendly because it utilizes materials which litter the environment.

RECOMMENDATIONS

Different banana varieties have got different element content. Since among the problems we wanted to solve was to clean the environment, so peels of different varieties were collected together.

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