



# The Use Of Rice Husks As Pesticides

10. Maua Seminary

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## Introduction:

It has been observed that different cereal crops like maize, beans and soya are destroyed by pests like weevils, but not rice. What if someone decides to remove the hard coating (husks) from rice, pure rice is also destroyed easier by weevils? Does the husk only prevent the attack of pesticides to rice? The study on the chemical content present in husks suggests the presence of phosphorus, potassium, and silicon. Pesticides can be made from phosphorus and other elements. When pesticides made from phosphorus is needed; the source of phosphorus should be obtained, and mainly is obtained from vegetations that grows in hard water that enable them to absorb it from the soil. It can be proved for its presence by addition of P.O.P to phosphorus expected sample followed by sulfuric acid and finally addition of sodium hydroxide. The faint pink color confirms the presence of phosphorus. Different theories explained on how phosphorus is extracted or the presence of phosphorus in rice husks. Good and less toxic pesticides could be made by using rice husks ashes modifying them into potassium phosphide.



## Materials:

Testing of the effectiveness of the pesticide :  
This was done by using maize grains to be stored as well as growing of maize in the selected school area.

Storing of maize grains in a store

## Procedures:

7 tins un affected school maize grains were taken and divided into two portions each with 3.5 tins of maize grains

Each portion was placed in a separate sack

In one sack a half tin of prepared rice husks ashes were introduced

In the other portion no ashes were introduced

Then in each about 30 maize weevils obtained from a school store were introduced and sacks left while close for 3 months while observing the destruction of maize after every 25 days

The record of how destruction of maize grains were taken after every 15 days.

## Step 1: Making of rice husks

Procedures:

Rice husks were taken (two tins of rice husks) and burned in air  
The burned husks (ashes) were collected and stored in a well prepared sack

## Step 2: Testing for presence of phosphorus in husks:

Procedures:

little amount of well prepared ashes (two tea spoons) were taken and placed in a conical flask.

four (4) cm<sup>3</sup> of p.o.p were added into a conical flask

10cm<sup>3</sup> of dilute sulphuric acid were added into the mixture

finally 10cm<sup>3</sup> of aqueous sodium hydroxide were added into the mixture; and the faint pink colour observed

## Step 3: Extracting/preparing of phosphorus from ashes

Procedures:

ashes (rice husks ashes) were taken and mixed with coke in a Pyrex large conical boiling flask

Heating process to about 10 minutes was done while allowing the gas to escape from the flask

Removal of top floating layer was done (slag)

A white liquid was seen to condense and collected. This is white phosphorus.



## Results:

**For step 1:** When rice husks were burnt in air, black residues (ashes) were formed; and colourless gases were evolved.

This agreed with Lambert & Holderness (1961:477), who explained that "burning of organic matter either from bones or minerals phosphates leaves the residue containing calcium phosphate". For that case our rice husks containing potassium phosphate and carbon, the gases evolved were carbon dioxide and the residue remained were potassium phosphate that can be used as pesticide.

**For step 2:** When P.O.P was used followed by addition of sulphuric acid and finally sodium hydroxide, faint pink color was formed.

This shows that rice husks contains phosphorus.

**For step 3:** When little amount of heat was supplied so as to heat the mixture of ashes, sand and coke no clear product was formed except the colorless gas that turned lime water into milk.

When much heat was supplied, the slug was formed at the top that floats; Also the white distills of phosphorus was formed that changed to white solid. Also a gas [colorless] was evolved, it was carbon monoxide gas.



No of days	No of maize grain saucepan 105		
	Destroyed (approximate)	Undestroyed approximate	Total
15	00	105	105
30	02	103	105
45	02.5	102.5	105
60	04	101	105
75	05	100	105
90	07	98	105

No of days	No of maize grain saucepan 105		
	Destroyed (approximate)	Undestroyed approximate	Total
15	00	105	105
30	00 (only 2 grains)	103	105
45	00 (only 2 grains)	103	105
60	00 (only 2 grains)	103	105
75	00 (only 2 grains)	103	105
90	00 (only 2 grains)	103	105

No of days	No of seedlings affected in the farm	Type of effect
10	00	00
20	02	Spots on leaves
30	02	Spots on leaves
40	02	Spots on leaves
50	02	Spots on leaves
60	03	Yellowish colour and spots on leaves

## Conclusions:

According to the results, it is proved that rice husks contains potassium and phosphorus elements, These elements are used by plants for two different purposes, either as fertilizer or as pesticides. The process of preventing maize grains from being destroyed by pests, proved that phosphorous and potassium can be used to either kill the pests or expel the pests. This agreed with Ngungi D.Nel.al(1978:81), who argued on how to make pesticide found in form of fumigant is phosphine; and phosphine contains phosphorous and hydrogen ions, through it is too toxic.

## Further information:

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