

Atelier de Formation des Formateurs en Enrichissement de la Farine

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Flour Fortification Initiative

A Public-Private-Civic Investment in Each Nation



Helen Keller
INTERNATIONAL

Production and Distribution

Quality Assurance – Principles and
Practices

QC vs QA (extract from Wikipedia)

- Quality control emphasises testing of products to uncover defects, and reporting to management who make the decision to allow or deny the release.
- Quality Assurance attempts to improve and stabilise production, and associated processes, to avoid, or at least minimise, issues that led to the defects in the first place. To prevent mistakes from arising, several QA methodologies are used.

- QA does not necessarily eliminate the need for QC: some product parameters are so critical that testing is still necessary. QC activities are treated as an integral part of the overall QA processes.

www.diffen.com/difference/quality_assurance_vs_quality_control

- **Quality Assurance** is process orientated and focuses on defect prevention
- **Quality control** is product orientated and focuses on defect identification

Basic Principles

- Get the raw material (s) right
- Look after the critical parts of the process
- The finished product look after itself

OBJECTIVES

- Provide information on what needs to be done to ensure that regulatory and consumer requirements are met.
- Improve knowledge regarding record-keeping and monitoring procedures that have to be instituted to be compliant with the quality assurance scheme.
- Improve understanding of different elements of the inspection procedure to be followed.

MAIN ELEMENTS

- Purchase appropriate blending equipment and / or feeder(s), weighing scales, and learn how to use the equipment properly
- Purchase fortification mix from reputable and/or registered suppliers
- Store fortification well protected from exposure to light or under the conditions laid down by the manufacturer. It is ideal to keep fortification mixes in their original containers. Once opened, exposure to the light and air should be minimised to prevent product degradation.

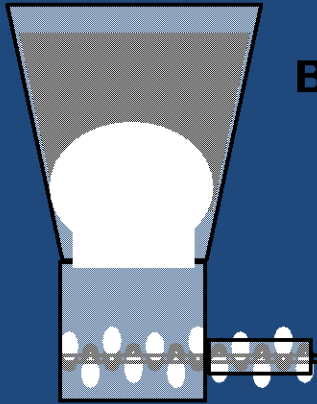
- Obtain and keep on record a certificate of compliance (CoA) for every batch of fortification mix.
- Employ, and adhere to, strict stock rotation procedures to prevent old stock losing potency and to comply with the shelf life expiry date. It is recommended you employ and implement the first in, first out (FIFO) system for this purpose.

- Keep records of grain procurement;
- Keep records of fortification mix inventory and usage;
- Keep production records of the amount of fortified bread flour produced;
- Keep monthly records of the amount of fortification mixes used every month. These records should correspond with the monthly production records;

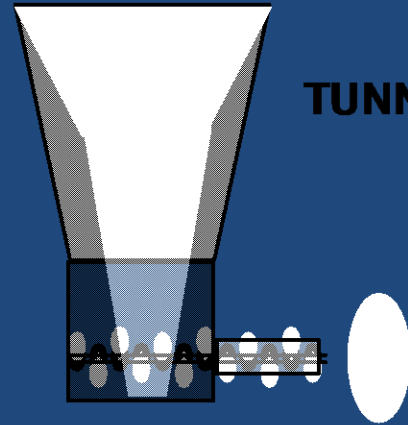
- Ensure that all critical stages of the manufacturing process are monitored to ensure the correct dosage levels are maintained through the following measures:
- Checking of fortification mix feeders to ensure they are delivering the correct dosage levels. This can be done by measuring the weight of fortification mix discharged over a specific time (1 or 2 minutes) and comparing the measurements with the target weight of fortification mix.

- Performing frequent visual checks to ensure fortification mixes are being used and that no blockages have occurred, and keeping a record of this.
- Performing regular iron spot tests on the bread flour.

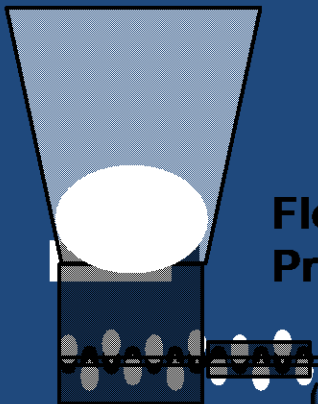
Premix Feeding Problems



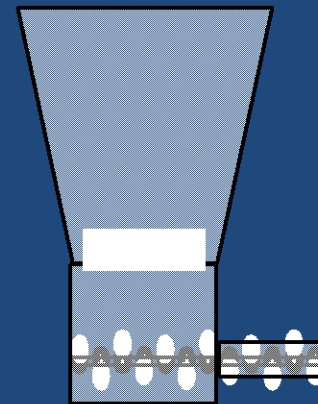
BRIDGING



TUNNELING



**Flour stops
Premix keeps feeding**



**Feeder stops
or hopper empty.
Flour keeps flowing**



Example of iron spot test on flour with different levels of added iron.

No added iron

30 ppm

50 ppm



- If you can't measure it
you can't control it

- Just because you can measure it doesn't mean
you have to

Making Life Easier







What Have We Forgotten?

Hint: Is the requirement only to add?



Left Hand Side Mixes – Right Hand Side Pushes



- Make all of these records available for inspection when required by the authorities who are responsible for monitoring the fortification programme and in implementing inspection or monitoring systems for all fortified food products.

- *“Require from any person the production of any book, notice, record, list or other document which is in the custody or under the control of that person or any other person on his behalf” and*

- *“Examine and copy any or any part of any book, notice, record, list or other document which appears to him to have relevance to his inspection or inquiry, and require any person to give an explanation of any entry therein, and take possession of any such book, notice, record, list or other document as he believes may afford evidence of an offence under this Act;”* cited from **Laws of Kenya, The Standards Act Chapter 496 Revised Edition 1981 section 14 (1) d and e respectively.**

- *“Examine and make copies of acquire any book or records in relation to fortified foodstuffs; and” “Interview any person or agent to determine whether these Regulations are complied with.”* cited from The Uganda Gazette No 2 Volume XCVIII dated 14th January, 2005. The Food and Drugs (Food Fortification) Regulations, 2005.

Examples of Records

Good record keeping equates to
“due diligence”

- Make individuals not “departments” responsible for the records
- Ensure they are adequately trained – and you can prove they have been trained
- Have someone who understands the process check all the records
- **Keep it SIMPLE**

Example of FORTIFICATION MIX RECEIVAL RECORD

Supplier				
Type Maize/Wheat				
Batch Number				
Certificate of Analysis				
Quantity				
Delivery Date				
Order Number				
Invoice Number				
Invoice Amount				
Issue Date				
Voucher Number				
Signature				

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INVENTORY CONTROL

Period Start Date _____ Time _____ Concentrate Type _____
 Period End Date _____ Time _____

Opening Concentrate Stock in Kilograms Physical stock as at Period Start – being the number of sealed boxes multiplied by 25kg plus the total actual weight of opened boxes.	A			
Concentrate Stock Received in Kilograms Total stock received between Period Start and Period End – being the number of boxes received multiplied by 25kg	B		TOTAL 1 A + B	
Closing Concentrate Stock in Kilograms Physical stock as at Period End - being the number of sealed boxes multiplied by 25kg plus the total actual weight of opened boxes.	C			
Concentrate Stock Loss in Kilograms Total stock loss between Period Start and Period End due to returns, damage etc.	D		TOTAL 2 C + D	
E. TOTAL WEIGHT OF CONCENTRATE USED FOR PERIOD TOTAL 1 – TOTAL 2				

Bag Ticket Number	Row 1	Row 2	Row 3	Row 4	Row 5
Finish The last bag number used during period					
Start The first bag number used during period					
Total Bags per Row Finish bag number minus Start bag number plus one					
Bag Size I.e. 65kg/ 50kg/ 15kg/ 125kg/ 10kg etc					
F Total Row Production Total Bags per Row for the period multiplied by Bag Size	F1	F2	F3	F4	F5

G. TOTAL WEIGHT OF PRODUCTION FOR PERIOD
F1 + F2 + F3 + F4 + F5

Total Theoretical Concentrate Usage in g Total Production for Period (MT) multiplied by the optimum concentrate dosage per MT $G \times 200g$	H	
Total Actual Concentrate Usage As calculated for total E	I	

DIFFERENCE BETWEEN THEORETICAL CONCENTRATE USAGE AND ACTUAL CONCENTRATE USAGE = $H - I$	
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WHAT HAVE WE FORGOTTEN?

The most variable component of
fortified wheat flour !!

The Flour Itself

- Addition rates of, for example, 200g/MT require we actually know how much flour is being produced per unit time.
- Variability in flour mills (per unit time) can be significant as extraction varies according to mill set up (easy to control) and the wheat to 1st Break itself (not so easy to control)

Influencing Factors

- The grist itself:
 - - a single wheat type or a blend of types
 - - how consistent is the wheat within each type in terms of morphology, test weight and moisture
 - - conditioning (tempering) conditions (time and water addition)

- Conditioning is often highly automated – just because a machine tells you its OK doesn't mean it is. Check the machine
- Millers frequently go round checking and adjusting mill settings when it is the wheat that needs adjusting