Meeting on Flour Fortification Monitoring and Surveillance: Process and Possibilities 4-7 March 2013, Balalaika Hotel Johannesburg, South Africa

Quality Assurance and Quality Control: Updates and Recent Developments

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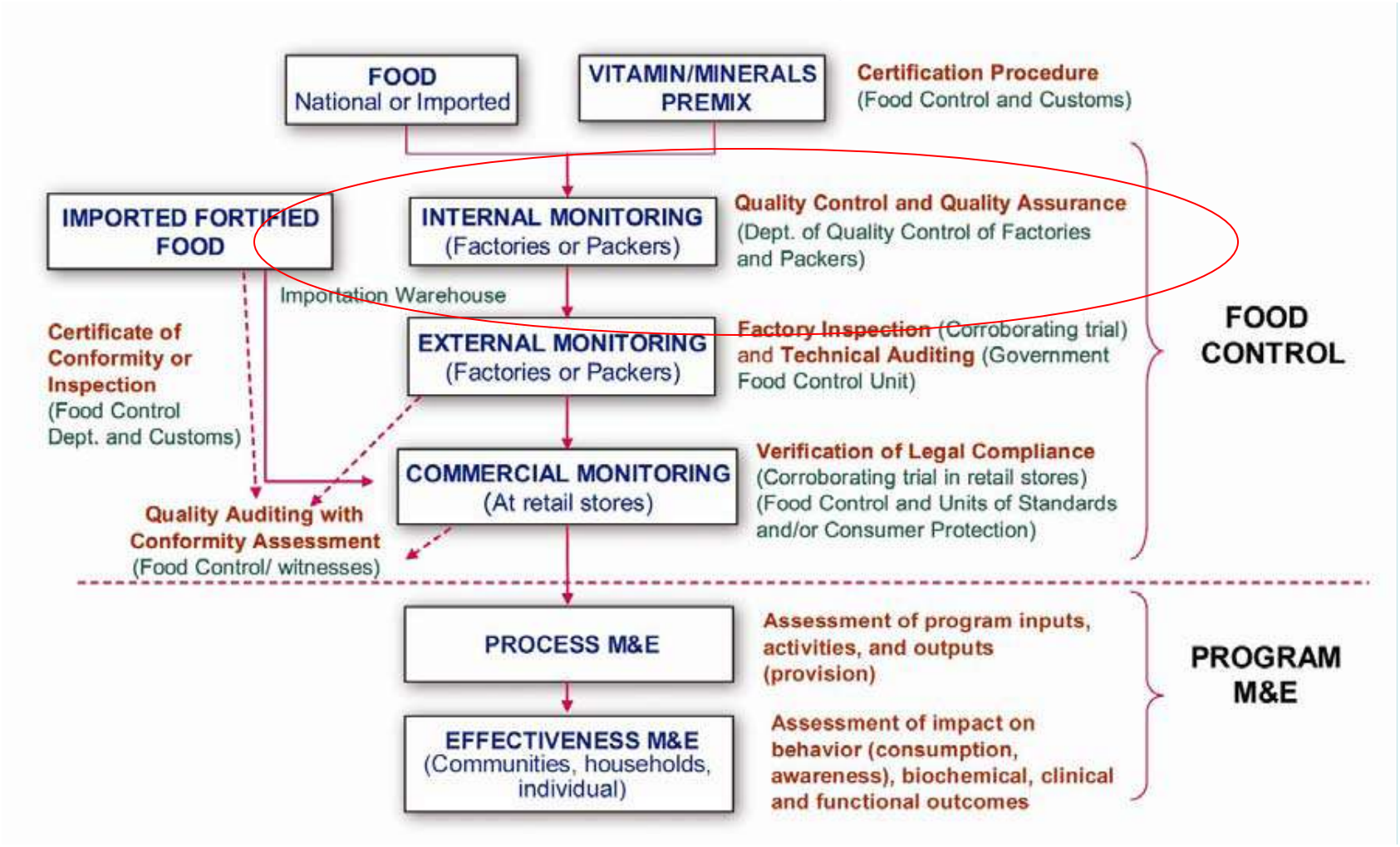
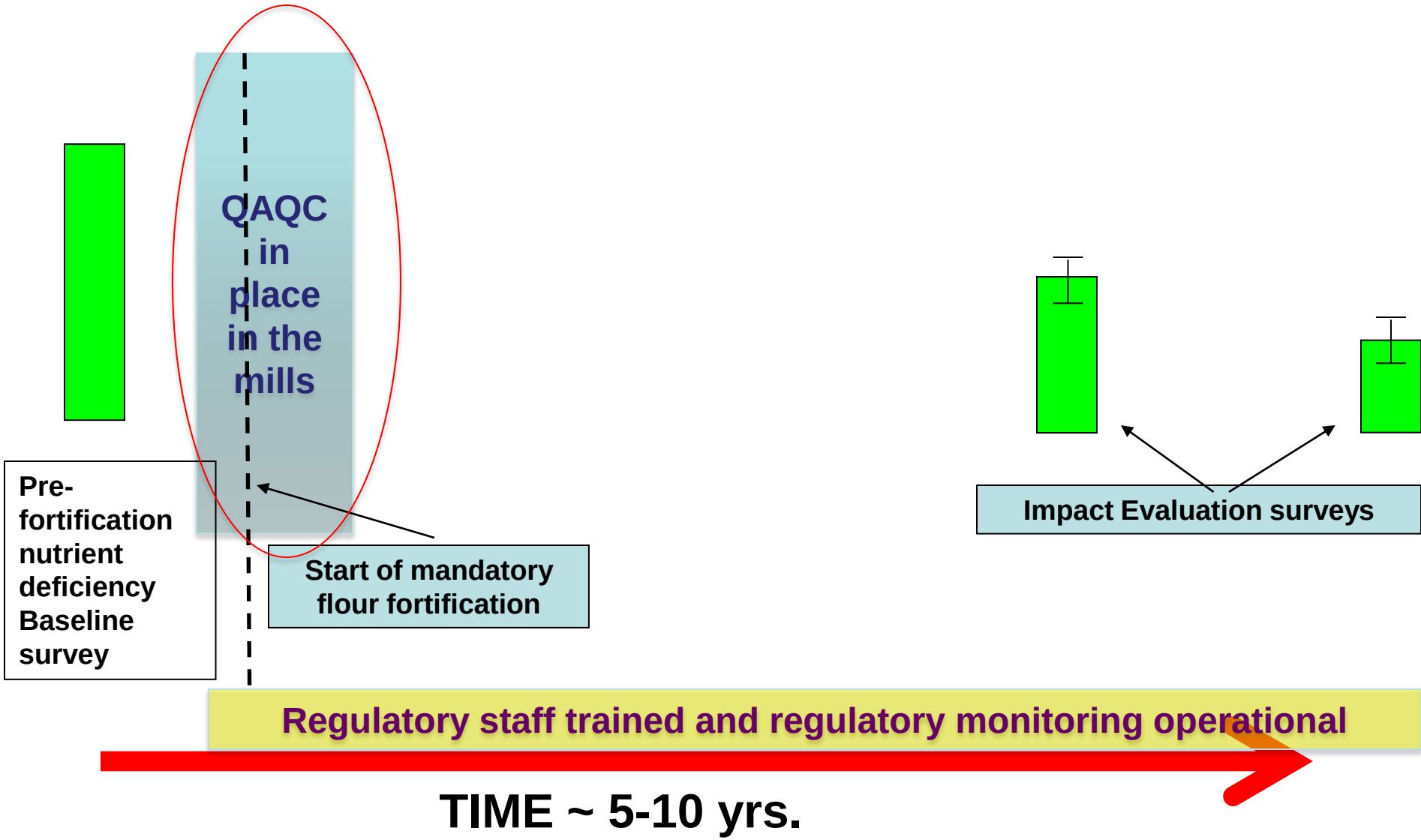
Flour Fortification Initiative
A Public-Private-Civic Investment in Each Nation

Framework for Monitoring of Flour Fortification Programs



The Flour Fortification Programme in “Fortifitopia”



Quality Assurance Quality Control - Rationale

- To ensure the consistent application of the fortification practice at the flour mill.
- To ensure that the commercial practices will result in the correct addition of micronutrients to the national diet of the country
- To assure that the fortification will result in the anticipated impact on public health

Basic practices and Best/Enhanced Practices

- Basic practices are those that meet the minimum requirements for consistent fortification at the mill
- Best/enhanced practices are those that meet more rigorous quality systems – will require additional investment by industry to comply
- CAVEAT – Countries need to strike a balance between making best/enhanced practices and the ability of industry to pay for them

Components of the system

- Quality systems – GMPs, SOPs, ISO, HACCP, ISO 22000, SQFI, GFSI
- Premix procurement and handling
- Feeders
- Fortification Process & Quality Control
- Quality Assurance and Audits

SQF Safe Quality Food Institute, GFSI Global Food Safety Initiative

Example – Quality Systems

- GMPs – Good Manufacturing Practices with manuals
- ISO Series – 9001, 9002
- HACCP – ISO22000, SQF

The minimum requirement for a flour mill is a set of documented GMPs.
Mills with ISO 9001, 9002 certification have enhanced systems
Mills with ISO 22000 and SQF etc. at highest level

Basic – Best/enhanced Practices Comparison – Quality Systems

Fortification Component	Basic Practice	Indicator	Best/Enhanced Practices	Indicator
Quality system	GMP system	GMP Manual & Records	ISO 9001, 9002 HACCP SQF ISO 22000	-Manuals -Records Documents -Third Party Audits

Basic – Best/enhanced Practices Comparison – Mill QC

Fortification Component	Basic Practice	Indicator	Best/Enhanced Practices	Indicator
Sampling Schedule, Qualitative testing, Quantitative testing, Usage & Inventory control	On file GMPs SOPs, Calculations	GMP Manual, Documents, Inspections, & Maintenance Records	Quality Systems and Manuals, SOPs	Manuals Records Documents Inspection documents & records

Basic – Best/enhanced Practices Comparison – Premix

Fortification Component	Basic Practice	Indicator	Best/Enhanced Practices	Indicator
Specifications Ordering, Packaging, Storage & Handling, Preblends	GMP System	GMP Manual, Documents, Inspections, & Inspection Records CoAs	Quality Systems and Manuals, SOPs	- Approved supplier list - Manuals - Records & Documents - Inspection/Audit documents - Third party CoAs

Basic – Best/enhanced Practices Comparison – Feeders

Fortification Component	Basic Practice	Indicator	Best/Enhanced Practices	Indicator
Specifications Types of Feeder Calibrations Maintenance	On file GMPs SOPs	-GMP Manual, -Calibration Documents, - Inspections, & Maintenance Records - Manual & volumetric feeders	Quality Systems and Manuals, SOPs	- Manuals - Records - Documents -Inspection documents -Loss in weight feeders with automatic controls

Basic – Best/enhanced Practices Comparison – Fortification Process

Fortification Component	Basic Practice	Indicator	Best/Enhanced Practices	Indicator
Feeder Location, Addition point, Feeder Control, Continuous monitoring, Production monitoring Feed rates, Check weighing	On file GMPs SOPs, Calculations	GMP Manual, Documents, Inspections, & Maintenance Records	Quality Systems and Manuals, SOPs	Manuals Records Documents Inspection documents & records HACCP SQF Certifications

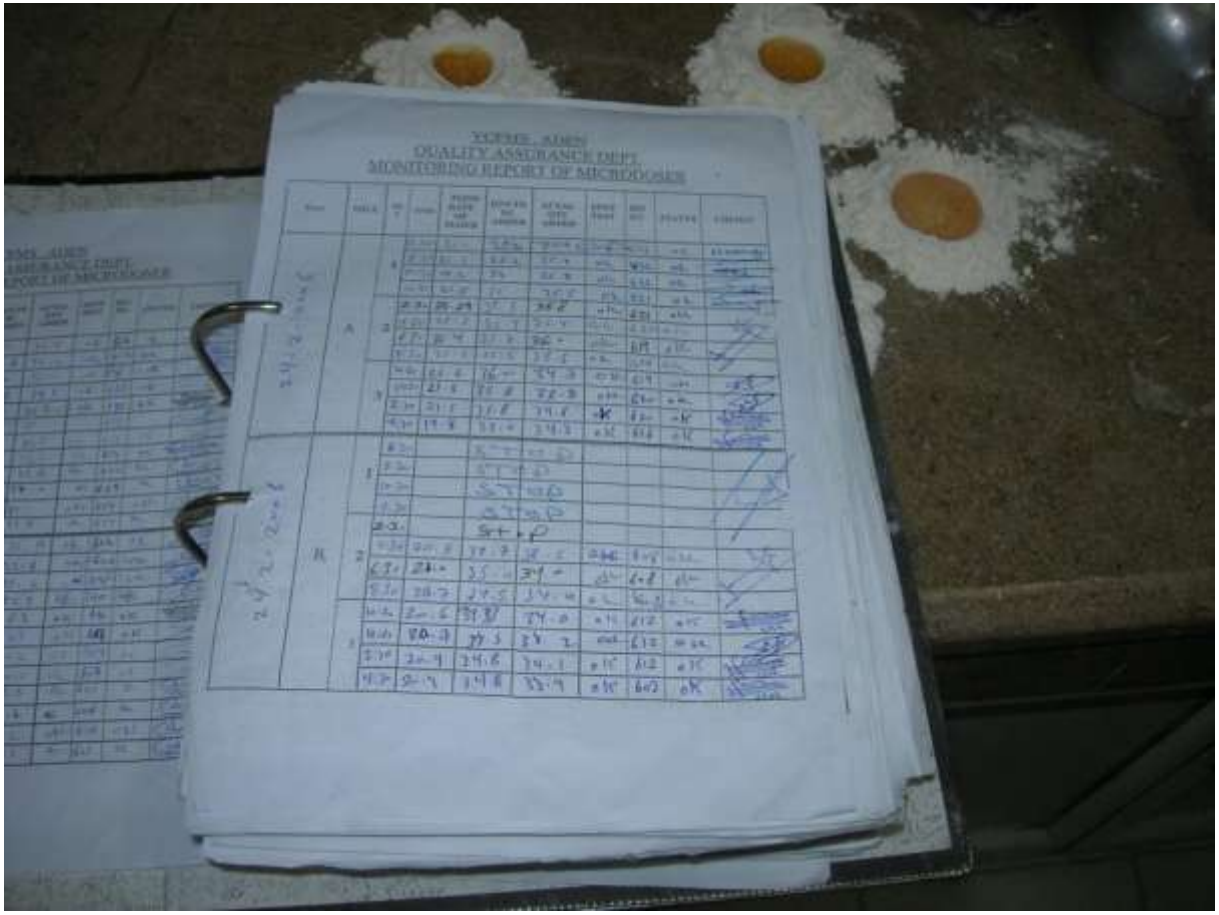
FFI TTSG Guidance Document

FLOUR FORTIFICATION
MILLERS BEST/ENHANCED PRACTICES

http://www.sph.emory.edu/wheatflour/KEYDOCS/Millers_Best_Practices.pdf

Document checklist can be used as auditing tool

Yemen Flour Mill QC Report



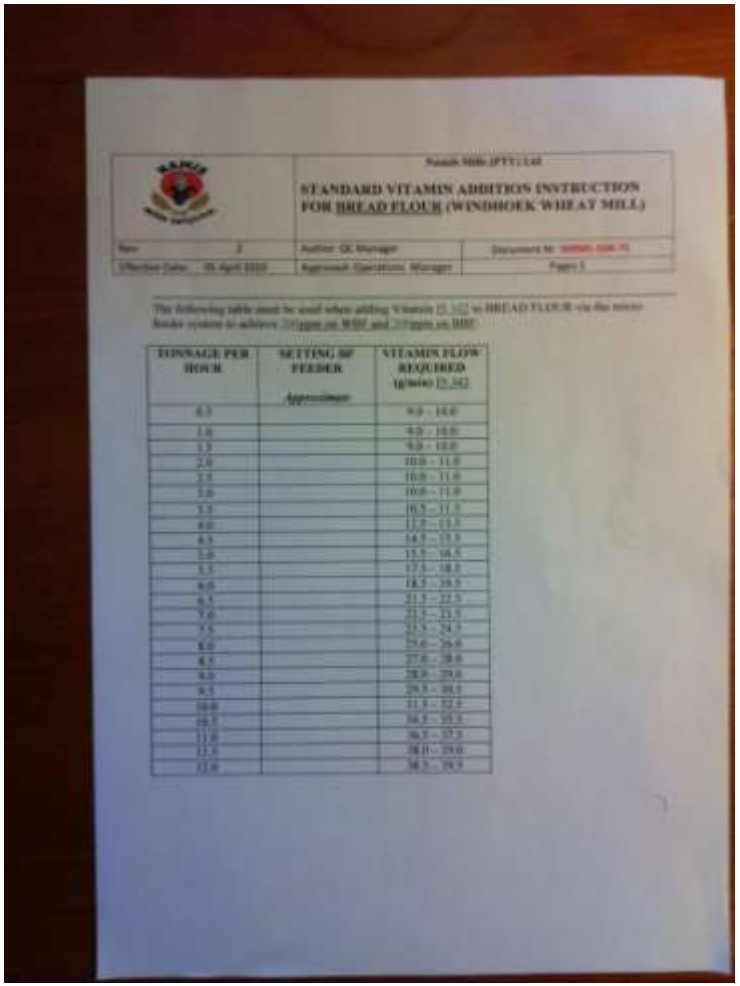
Mill Feeders – What do you see?

Mill Feeders: What is the difference?

Premix Addition Records: Examples

STANDARD VITAMIN ADDITION INSTRUCTION FOR SPECIAL AND SIFTED/UNSIFTED MAIZE MEAL (WINDHOEK).

TONNAGE PER HOUR	SETTING FEEDER 2 (SPECIAL only) Approximate	SETTING FEEDER 3 (SIFTED/UNSIFTED) Approximate	VITAMIN FLOW REQUIRED (g/min)
6.5	(10)	(27)	4.5 - 5.5
7.0	(15)	(27)	5.0 - 5.0
7.5	(15)	30	5.0 - 5.0
8.0	(15)	30	5.0 - 6.0
8.5	(15)	45	6.0 - 5.0
9.0	(15)	50	6.5 - 7.5
9.5	(15)	55	7.5 - 8.5
10.0	(15)	60	8.0 - 7.0
10.5	(15)	65	7.0 - 8.0
11.0	(15)	70	8.0 - 9.0
11.5	(15)	85	9.0 - 10.0
12.0	(15)	100	9.5 - 10.5
12.5	(15)	110	10.0 - 11.0
13.0	(15)	120	11.0 - 12.0
13.5	15	130	12.0 - 13.0
14.0	16	(max.)	13.0 - 14.0
14.5	17	(max.)	13.0 - 14.0
15.0	18	(max.)	14.5 - 15.5
15.5	19	(max.)	15.5 - 16.5
16.0	20	(max.)	16.0 - 17.0
16.5	21	(max.)	17.0 - 18.0
17.0	22	(max.)	17.5 - 18.5
17.5	23	(max.)	18.5 - 19.5
18.0	24	(max.)	19.5 - 20.5



STANDARD VITAMIN ADDITION INSTRUCTION FOR BREAD FLOUR (WINDHOEK WHEAT MILL)

TONNAGE PER HOUR	SETTING SF FEEDER Approximate	VITAMIN FLOW REQUIRED (g/min)
6.5		9.0 - 10.0
7.0		9.0 - 10.0
7.5		9.0 - 10.0
8.0		10.0 - 11.0
8.5		10.0 - 11.0
9.0		10.0 - 11.0
9.5		10.5 - 11.5
10.0		11.0 - 12.0
10.5		11.5 - 12.5
11.0		12.5 - 13.5
11.5		13.5 - 14.5
12.0		14.5 - 15.5
12.5		15.5 - 16.5
13.0		16.5 - 17.5
13.5		17.5 - 18.5
14.0		18.5 - 19.5
14.5		19.5 - 20.5
15.0		20.5 - 21.5
15.5		21.5 - 22.5
16.0		22.5 - 23.5
16.5		23.5 - 24.5
17.0		24.5 - 25.5
17.5		25.5 - 26.5
18.0		26.5 - 27.5
18.5		27.5 - 28.5
19.0		28.5 - 29.5
19.5		29.5 - 30.5
20.0		30.5 - 31.5
20.5		31.5 - 32.5
21.0		32.5 - 33.5
21.5		33.5 - 34.5
22.0		34.5 - 35.5
22.5		35.5 - 36.5
23.0		36.5 - 37.5
23.5		37.5 - 38.5
24.0		38.5 - 39.5

Recent Developments

- Millers Fortification Toolkit Updated
  - Additional information and video clips based on new technologies, feeders, QC tests
  - Has been posted on line at

  http://www.ffinetwork.org/implement/toolkit.html
- Iron Spot Test modified for NaFeEDTA
  - Official AACC method did not detect NaFeEDTA
  - Test modified to detect NaFeEDTA – simple modification