

Progress Report on the National Residues Monitoring Program for Certain Harmful Substances in Aquaculture Fish

1. General

The National Residues Monitoring Program (NRMP) for residues of certain harmful veterinary drugs and others substances in aquaculture fish and fishery products is implemented with allocated budget and plan approved by the Ministry of Livestock, Fisheries and Rural Development (MLFRD)¹. The DOF within MOALI is the designated Central Competent Authority (CCA) for fishery product exports to the EU. Fish Inspection and Quality Control Section (FIQCS)² under Department of Fisheries (DOF) is responsible for carrying out the NRMP in accordance with the written procedures described in Official Control System Manual (O CRS-MANUAL) for the Inspection and Certification of Fish and Fishery Products. The Residues Monitoring Committee (RMC) is responsible for managing the effective implementation, monitoring and reporting of all NRMP activities.

2. Table 1: Scope of the NRMP 2014/15

Division	Township	Area (Ha)	Aquaculture species
Yangon	Kyauk Tan	261.0	Crab (<i>Scylla serrata</i> and <i>Scylla olivacea</i>)
Yangon	Twan Tay	283.5	Rohu (<i>Labeo rohita</i>), Tilapia (<i>Oreochromis spp.</i>), Pangush (<i>Pangasius spp.</i>), Puti (<i>Puntius</i>), Katla (<i>Catla catla</i>), Mrigal (<i>Cirrhinus spp.</i>)
Ayeyarwaddy	Nyaung Done	524.2	Rohu (<i>Labeo rohita</i>), Tilapia (<i>Oreochromis spp.</i>), Pangush (<i>Pangasius spp.</i>), Puti (<i>Puntius</i>), Katla (<i>Catla catla</i>), Mrigal (<i>Cirrhinus spp.</i>)
Ayeyarwaddy	Ma U Bin	1622.1	Rohu (<i>Labeo rohita</i>), Tilapia (<i>Oreochromis spp.</i>), Pangush (<i>Pangasius spp.</i>), Puti (<i>Puntius</i>), Katla (<i>Catla catla</i>), Mrigal (<i>Cirrhinus spp.</i>)
Total		2690.8	

¹MLFRD was renamed to MOALI by March 2016 but the sake of continuity with the Annual Plan (2014/2015) the term MLFRD will be maintained in this report.

²FIQCS was renamed to QCRS by November 2016 but for the sake of continuity with the Annual Plan (2014/2015) the term FIQCS will be maintained in this report.

2.1 Sampled Species

All samples have been collected at farms, included in the segregated system, at all stages of production. For Group A substances several sizes of the animals from nursery farms and grow out farms were taken and for Group B Substances the size of animals were mostly approximately 900 g to 1 kg (market size).

Table2–Places of Sample Collection

No.	Production Stage	Samples taken	Testing parameters
1.	Hatchery / nursery	Hatchery water and juvenile fish	A6 (chloramphenicol)
2.	Aquaculture site	Farmed fish at all growth stages	A1, A3, A6, B1, B2a, B3a, B3c, B3e
3.	Aquaculture site	Dried feed pellets	B3d (aflatoxin B1)
4.	Processing factories	Harvested fish	A1, A3, A6, B1, B2a, B3a, B3c, B3e

3. Sampling and Testing

3.1 Sampling

The sampling was carried out by the Inspection and Certification Unit (ICU) in accordance with the plan approved by the RMC and further developed to monthly sampling plans by parameter and districts.

Table 3.1: Sampling in 2014/15

Regions	Yangon (Kyauk Tan)		Yangon (Twantay)		Ayeyarwaddy (Nyaung Done)		Ayeyarwaddy (Mau Bin)		Total		
	Plan	De Facto	Plan	De Facto	Plan	De Facto	Plan	De Facto	Plan	De Facto	Difference
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)=(10)-(11)
A1 Group (Stilbenes): diethylstilbestrol	0	0	3	2	4	4	14	16	21	22	+1
A3 Group (Steroids): methyltestosterone	0	0	2	1	5	5	14	14	21	20	F1
A6 Group (Prohibited veterinary medicines): chloramphenicol, nitrofurans	1	1	2	2	4	5	15	14	22	22	0
B1 Group (Antibacterial substances): Tetracycline, Chlorotetracycline, Oxytetracycline, Oxolinic acid, Florfenicol	1	1	7	5	13	11	44	45	65	62	F3
B2a: Anthelmintics (Praziquantel)	1	1	3	2	5	5	18	18	27	26	F1

B3a Group (Organochlorinated Pesticides): DDT, Aldrin, Dieldrin											
B3c Group (Heavy metals): Pb, Cd, Hg	1	1	4	2	9	8	25	24	39	35	F4
B3d Group (mycotoxin): Aflatoxin (B1)											
B3e Group (Dyes): MG/LMG, CV/LCV											
Total	4	4	21	14	40	38	130	131	195	187	a8

3.2 Testing

Table 4: Analytical Results in 2014/15

Groups	Violated samples/total analysed samples (%)
	Year 2014/15
A1 Group (Stilbenes): diethylstilbestrol	0
A3 Group (Steroids): methyltestosterone	Enquiring
A6 Group (Prohibited veterinary medicines): chloramphenicol, nitrofurans	0
B1 Group (Antibacterial substances): Tetracycline, Chlorotetracycline, Oxytetracycline, Oxolinic acid, Florfenicol	0
B2a: Anthelmintics (Praziquantel)	Enquiring
B3a Group (Organochlorinated Pesticides): DDT, Aldrin, Dieldrin	0
B3c Group (Heavy metals): Pb, Cd, Hg	0
B3d Group (Mycotoxin): Aflatoxin (B1)	0
B3e Group (Dyes): MG/LMG, CV/LCV	0

Table 5. Testing results in 2014/15

Monitored groups	Monitored substances	Testing methods	Analysis		MRLs (ppb)	Number of violated samples
			Plan	De facto		
A1. STILBENES	Diethylstilbestrol	LC/MS/MS	21	22	ND	0
A3. Steroids	Methyltestosterone	F	21	0		F
A6. Chloramphenicol	Chloramphenicol	ELISA	22	22		0
A6.NITROFURANS		LC/MS/MS	22	22		0
Nitrofurantoin	AOZ	LC/MS/MS	22	22	ND	0
Furaltadone	AMOZ	LC/MS/MS	22	22		0
Furazolidone	AHD	LC/MS/MS	22	22		0
Nitrofurazone	SEM	LC/MS/MS	22	22		0
B1. Antibiotics	Tetracycline	LC/MS/MS	65	16	100	0
Confirmation method	Chlorotetracycline			11	100	0
	Oxytetracycline			18	100	0
	Oxolinic acid			8	100	0
	Florfenicol			9	1000	0
B1. Antibiotics						
B2a. Anthelmintics	Praziquantel	F	27	0	ND	F
B3a. Organochlorine pesticides	Aldrine	GC/μFECD	39	8	200	0
	Dieldrine	GC F ECD			200	0
	DDT				1000	0
B3c. Heavy metals	Pb	ICPFMS	39	4	300	0
	Hg			1	500	0
	Cd			4	50	0
B3d. Mycotoxins	Aflatoxin B1	ELISA		11	20	0
B3e. Dyes	Malachite Green/ LeucomalachiteGreen	LC/MS/MS		7	ND	0
	Crystal Violet/ Leucocrytal Violet	LC/MS/MS		7		0
Total						0

