Committee on Commodity Problems

INTERGOVERNMENTAL GROUP ON TEA

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REPORT OF THE WORKING GROUP ON MAXIMUM RESIDUE LEVELS (MRLS) AND MRLS IN THE BREW
(BASED ON FEEDBACK FROM INDIA, UK, US, CHINA AND CANADA)

# Background

The Working Group (WG) on MRLs in Tea was constituted in the Bali Meeting of the FAO-IGG on Tea in 2005 to assist data generation and submission as required for fixation of MRLs of pesticides in tea. Since the 1990’s, pesticide residues in tea has been a major non-tariff trade barrier affecting tea trade globally. The problem was due mostly to certain default MRLs set at analytical detection limits and the only way to tackle this problem was to help fix realistic MRLs which would be acceptable to all stakeholders in order to ensure food safety as well as smooth tea trade globally.

At the first meeting of the WG in Kolkata a roadmap was prepared to work on 24 pesticides selected the on basis of global use pattern. The objective was to generate data for fixing Codex MRLs as well as to use the data for fixing national MRLs which may lead to harmonization. Since then Codex MRLs in tea were fixed for 17 pesticides and the work of this initiative contributed to this process.

At the 21stsessionof FAO-IGG on Tea held on 5-7 November 2014 at Bandung, Indonesia it was observed that there was much scope of data submission for additional pesticides by member states simultaneously through their national codex contact points.

The residues data generated also served as the basis for fixation of several national and international MRLs. The Codex MRLs for some compounds were later adopted by EU. Today there are CODEX and EU comparable MRLs for a number of compounds in Tea as shown below:

|  |  |  |
| --- | --- | --- |
| **Pesticides** | **CODEX MRL (mg/kg)**  | **EU MRL (mg/kg)** |
| Paraquat | 0.2 | 0.05\* |
| Methidathion | 0.5 | 0.1\* |
| Clothianidin | 0.7 | 0.7 |
| Fenpropathrin | 2 | 2 |
| Chlorpyrifos | 2 | 0.1\* |
| Indoxacarb | 5 | 5 |
| Propargite | 5 | 0.05\*# |
| Deltamethrin | 5 | 5 |
| Endosulfan | 10 | 30 |
| Etoxazole | 15 | 15 |
| Cypermethrin | 15 | 0.5 |
| Hexythiazox | 15 | 4 |
| Thiamethoxam | 20 | 20 |
| Permethrin | 20 | 0.1\* |
| Bifenthrin | 30 | 5 |
| Dicofol  | 40 | 20 |
| Flubendiamide | 15 | 0.02\* |

 [http://www.codexalimentarius.net/pestres/data/commodities/details.html?id=101]
 \*Lower limit of analytical determination, # effective 3.10.2015.

The data generated in tea producing countries under the initiatives of the WG has also led to setting up of realistic MRLs in many tea importing countries like Australia, Canada and the USA which was in line with the decision taken at the 20th session of the IGG on Tea (Colombo, 30 January - 1 February 2012) [Ref Document: CCP 12/14 E February 2012] to change the nomenclature of “*harmonization of tea MRLs*” to "*Achieve global cooperation obtaining MRLs in tea*". Setting of realistic MRLs in EU in the recent years resulted in a positive impact on export of tea to EU. Having MRLs in the importing countries has opened up new markets for the tea producing countries using such products which otherwise would have to face very low default MRLs. The default MRLs are the major trade barrier and the collective work of this group is expected to replace them into realistic MRLs that will be satisfy all stakeholders.

It is time to look for alternatives to the traditional approach of risk assessment for fixing MRLs or to harmonization of MRLs. Examples of 23 nations harmonizing their MRLs in Grape under APEC initiative is an indication of what the future has for us. In August 2015, Kenya has adopted Codex MRLs for 14 pesticides in tea. It’s a necessity now that MRLs are fixed in tea for new promising molecules as well as those left out so that ever increasing pests particularly in view of the climate change can be managed effectively.

**Data submission for MRL fixation**

Under 2013 JMPR Follow-up Evaluation Schedule, two pesticides –viz., Fenpyroximate and Propiconazole used in tea in India were included. The data on propiconazole and fenpyroximate in JMPR format was submitted to National Codex Point for evaluation by JMPR in December, 2012. In March, 2013 data for 2,4-D and Imidacloprid were submitted by India to national Codex Point for evaluation by JMPR under 2014 JMPR Follow-up Evaluation Schedule.

Under 2015 JMPR New Compounds Schedule, the pesticide Fenazaquin and Under 2015 JMPR Follow-up Evaluation Schedule, Acetamiprid and Tebuconazole are included. These two compounds are in the priority list and work on data generation is in progress. In India 4 field trial data is available for acetamiprid. China has 8 trials data.Sri Lanka has 8 field trials data for Tebuconazole.

China has submitted data on Indoxacarb in tea to Codex, based on eight field trials conducted in China. The MRL of indoxacarb was approved at 5 mg/kg in JMPR meeting in October, 2013 and in May, 2014.

Field trials were carried out to generate residue data in tea for acetamiprid (4 trials), emamactin benzoate (2 trials) and flubendiamide (2-trials), oxyfluorfen (2-trials), thiacloprid and in India as per the priority list. The data generated is being compiled for submission. The risk assessment was carried out using the brew factor.

The supervised field trials as par GAP for chlorfenapyr, indoxacarb and tolfenpyrad have been conducted and completed in Chinaduring2011-2013. The field trials for chlorfenapyr, indoxacarb and tolfenpyrad were conducted in four locations in 2010-2012, 2011-2012 and 2012-2013 respectively.

**JMPR Evaluation**:

The 2015 47th CCPR meeting recommended advancement of the proposed MRLs for tea [Fenpropathrin MRL 3 mg/kg; Flufenoxuron MRL 20 mg/kg] for adoption at stage 5/8. It should be noted that reservations were raised by the EU to both these proposed MRLs .

The 2016 48thCCPR meeting recommended the advancement of the proposed MRL for imidacloprid in tea (50 mg/kg) for adoption at stage 5/8. The proposed schedule for 2017 currently contains the following residue evaluations for tea: Cyclaniliprole (tea – 6 trials), Fenazaquin (tea), 2,4-D (tea), Lambda-cyhalothrin (tea), Profenofos (tea), Pyraclostrobin (tea – 8-10 trials), Tebuconazole (tea), Carbendazim (Thiophanate-methyl) (tea).

In addition the following compounds on the priority list for tea are also scheduled for review, although not currently for residues in tea: Azoxystrobin, Difenaconazoleand Trifloxystrobin.

The following compounds of interest are currently scheduled for 2018 review: Chlorfenapyr (tea – 6 trials), Pyrifluquizanon (tea – 6 trials, moved from 2015), Fluazinam (tea – 5 trials), Quinalphos (tea), Spiromesifen (Tea, moved from 2015),Hexaconazole (tea), Acetamiprid (tea), chlorothalonil.

**Harmonization of MRLs**

The harmonization of MRLs internationally was the goal set by this group initially. It is acknowledged that due to the different regulatory evaluation processes in different counties, evaluation of the same field trial data package can result in different MRLs. Since Aug 2014, MRLs have been granted for spiromesifen (2014), etoxazole (2014), deltamethrin (2015), azoxystrobin (2015), bifenthrin (2016) and chlorfenapyr (2016) in Canada; for tolfenpyrad (2014), azoxystrobin (2015), propiconazole (2015) and pyriproxyfen (2016) in the USA; indoxacarb (2015) in the EU. In Australia in 2015 MRLs were adopted for chlorfenapyr, chlorpyrifos-methyl, clothianidin, diflubenzuron, etoxazole, fenpyroximate, flubendiamide, hexythiazox, krezoxim-methyl, penconazole, permethrin, spiromesifen, tebufenpyrad, thiacloprid, thiamethoxam, triadimefon, triadimenol, tridemorph. In addition the MRL for endosulfan was modified in 2015 from 30 to 10 mg/kg and in 2016 an MRL was established for indoxacarb.

A comparison of current Codex and consuming country MRLs shown below indicate where progress has been made and where adoption of realistic MRLs is still required:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Pesticides | CODEX MRL (mg/kg)  | EU MRL(mg/kg) | USA(mg/kg) |  Canada(mg/kg) | Australia(mg/kg) | Japan(mg/kg) |
| 2,4-D  | - | 0.1\* |  |  |  |  |
| Acetamiprid | - | 0.05\* | 50 |  |  | 30 |
| Azoxystrobin | - |  0.05\* | 20 | 20 | 20(T) | 10 |
| Bifenthrin | 30 | 5 | 30 | 30 | 5 | 25 |
| Chlorfenapyr |  | 50 |  | 70 | 50 | 40 |
| Chlorpyrifos | 2 | 0.1\* |  |  | 2 | 10 |
| Clothianidin | 0.7 | 0.7 | 70 |  | 0.7(T) | 50 |
| Cypermethrin | 20 (\*15) | 0.5 |  |  | 0.5 | 20 |
| Deltamethrin | 5 | 5 |  | 7 | 5 | 10 |
| Dicofol  |  40 | 20 | 50 |  | 5 | 3 |
| Endosulfan | 10 | 30 | 24 |  | 10 | 30 |
| Ethion  | - | 3 |  |  | 5 | 0.3 |
| Etoxazole | 15 | 15 | 15 | 15 | 15 | 10 |
| Fenazaquin | - | 10 |  |  |  |  |
| Fenpropathrin | 2 | 2 | 2 | 2 | 2 | 25 |
| Fenpyroximate | - | 0.1 | 20 |  | 0.1 | 10 |
| Flubendiamide | 50 | 0.02\* |  | 0.02 | 0.02 | 40 |
| Flufenoxuron | - | 15 |  |  |  | 15 |
| Glufosinate ammonium | - | 0.1\* |  |  | 20(T) | 0.3 |
| Glyphosate | - | 2.0 | 1 |  | 2 | 1 |
| Hexaconazole | - | 0.05\* |  |  |  |  |
| Hexythiazox | 15 | 4 |  |  | 4 | 35 |
| Indoxacarb | 5 | 5 |  |  | 5 |  |
| L-cyhalothrin | - | 1 |  | 2 | 1 | 15 |
| Methidathion | 0.5 | 0.1\* |  |  |  | 1 |
| Oxyfluorfen | - | 0.05\* |  |  |  |  |
| Paraquat | 0.2 | 0.05\* |  |  | 0.5(T) | 0.3 |
| Permethrin | 20 | 0.1\* |  |  | 0.1 | 20 |
| Propargite | 5 |  0.05\* | 10 |  |  | 5 |
| Propiconazole | - | 0.1\* | 4 | 4 |  | 0.1 |
| Spiromesifen | - | 50 | 40 | 60 | 50 | 30 |
| Thiacloprid | - | 10 |  |  | 10 | 30 |
| Thiamethoxam | 20 | 20 | 20 |  | 20 | 20 |

*\** Indicates lower limit of analytical determination*;* (T) temporary.

The Food Safety & Standard Authority of India (FSSAI) has also undertaken an initiative in May 2013 to harmonize its own standards with that of Codex or other International standards and various stakeholders have been engaged in e-working groups. The work is in progress. (<http://www.fssai.gov.in/Portals/0/>Pdf/Proceedings\_of\_Codex\_workshop\_II(02.11.13).pdf.,
<http://www.fssai.gov.in/Portals/0/Pdf/scanpdf/AnnexureI-Strategy> for Standards Development.pdf)

In order to harmonize the calculation of MRLs so that the evaluation of the same set of residue trial data results in the almost similar MRL recommendation, use of the OECD calculator may be actively considered. The OECD calculator is adopted in countries like India since 2013. This approach may hasten the ultimate objective of harmonization of MRLs of different countries.

In 2008-2015, seven international MRLs for endosulfan (CAC and EPA), cypermethrin (CAC), bifenthrin (EPA) and indoxacarb (China, CAC and EU) have been regulated on the basis of data submitted by China and IGG (Table 1).

In the 39rd CCPR Meeting in 2007, CCPR planned to withdraw the 30 mg/kg MRL of endosulfan in tea according to the EU suggestion. If so MRL 0.01 mg/kg would be adopted. Chinese delegation, with coorporation to Indian delegation in CCPR, raised an objection. After the 39th CCPR, China delegation devoted to conduct related experiments and suggested more rational MRLs within three years. In 2009, a report was submitted to JMPR, including the endosulfan results of degradation in experiments, processing factor, transfer rate from dry tea to tea brew and the risk assessment. In 2010, CCPR accepted and established CAC MRLs for endosulfan, 10 mg/kg in tea raised by China delegation. Before this modification, EPA planned to modify the endosulfan MRLs to 10 mg/kg instead of 0.01 mg/kg. The uniform MRLs for endosulfan in CAC and EPA were set.

In the 41rd CCPR Meeting in 2009, EU proposed to withdraw MRL of cypermethrin 20 mg/kg and enforce 0.01 mg/kg. It was not reasonable because of the low water solubility and low risk of cypermethrin. In CCPR Meeting in 2012, JMPR modified the MRL of cypermethrin to 15 mg/kg based on the risk assessment of cypermethrin in tea prepared by Chinese delegation.

Bifenthrin is a pesticide with low water solubility and low intake risk. Combined the highest residue level in dry tea from experiment in China, the highest amount of tea used for drinking per day and bifenthrin level in tea brew, the percentage of bifenthrin from tea infusion to ADI was less than 1%. As a result, EPA modified the original suggestion of 0.01 mg/kg and regulated the MRL 5 mg/kg after considering the real risk.

Indoxacarbwas selected to substitute neonicotinoids in tea industry in China. Given the information of eight experiments conducted in China from 2011-2013, the MRL of indoxacarb in tea was set at 3 mg/kg in China in 2013. At the same time, the application for setting MRL of indoxacarb in tea in Codex was submitted in 2013. The MRL of indoxacarb was approved to be set at 5 mg/kg in JMPR meeting in October, 2013 and discussed and approved as Codex MRL in teainCCPRmeetingin May, 2014. In May, 2015, EU modified the initial MRL of indoxacarb 0.05 to 5 mg/kg referring to Codex MRL. In the draft document GB 2763-2015, a level of 5 mg/kg as MRL of indoxacarb in tea in China was discussed in July, 2015.

**Table 1. Regulation and modification of seven international MRLs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Pesticide** | **Regulator** | **Initial MRLs****(mg/kg)** | **Original proposed MRLs****(mg/kg)** | **Modified MRLs** **(mg/kg)** | **Year of adoption** |
| Endosulfan | US EPA | 30 | 0.01 | 10 | 2008 |
| CAC | 30 | 0.01(EU suggestion) | 10 | 2010 |
| Cypermethrin | CAC | 20 | 0.01(EU suggestion) | 15 | 2012 |
| Bifenthrin | US EPA | 5 | 0.01 | 5 | 2009 |
| Indoxacarb | CAC | not set | not set | 5 | 2014 |
| EU | 0.05 | 0.05 | 5 | 2015  |
| China | 3 | 5 | 5 | 2015 |

# 21st Session at Bandung, Indonesia

The Group examined this agenda item with the assistance of a presentation delivered by the chairpersons of the WGs and recommended to continue with the activities defined in the work plans, in particular, to exploring the scope for capacity building in data generation in producing countries. It was proposed that the Working Group on MRLs in the Brew be dissolved after the submission and endorsement of the policy document. [CCP:TE 14/6, Nov 2014]. The report of this session also mentions that a major achievement of the IGG was the submission to – and acceptance by – CODEX Alimentarius of a list of priority chemicals detailing the correlation between field trial protocol and good laboratory practices (GLPs) supervised protocol [CCP:TE 14/6].

**Intersessional Meeting at Milan held on 14-15 Oct, 2015**

In the session, the group examined the progress and reviewed the priority list and recommended to continue the activities defined in the work plan and proposed that the policy document on the brew factor based risk assessment for fixation of MRL in tea be submitted to Codex. The following action plan was formulated:

# Action plan:

(1) To assess the status of field trials required for setting Codex MRLs & submission of the list for advance notification to FAO-IGG & National Codex Points.

(2) To update the priority list based on new information on Risk assessment, or Replacements or Potential use in Tea

(3) To share information on consuming countries on MRL restrictions.

(4) To assess status & development of required infrastructure & new methods to cope with changing situations and cost.

(5) Communication plan for quick information exchange and advance notification for simultaneous data submission by members and seeking manufacturers support and to negate adverse publicity.

(6) Data submission to include brew factor based risk assessment for all teas traded globally except Matcha Tea.

(7) To share available information on anthraquinone, nicotine and other contaminants and to carryout a global study to generate data on occurrence in tea. India, Sri Lanka, China, Kenya, Japan, UK and Germany agreed to participate in this collaborative study.

(8) Explore a potential representation in CODEX for tea to give agreed position a voice.

 (9) Share information on development of pest resistance.

(10) The policy document entitled “Guidance Document on Risk Assessment Using Brew Factor for Fixation of MRLs of Pesticides in Tea” will be submitted to the CCPR and JMPR for reference.

**Progress made since 21st Session at Bandung, Indonesia held on 5-7 Nov 2014 and Intersessional Meeting at Milan held on 14-15 Oct, 2015:**

1. To assess status of field trials required for setting Codex MRLs & submission of the list for advance notification to FAO-IGG & National Codex Points.
	1. ***Codex Priority list updationfor fixation of MRLs in Tea***

A circular was sent from the WG on May, 2015 to all stakeholders requesting updates on the priority list, data compilation and submission by email and a posting on May 14, 2015 on the FAO-IGG forum with the information that the Indian delegation to 47th Session CCPR meeting held in Beijing, China on 13-18 April 2015 proposed inclusion of additional pesticides in Codex priority list for fixation of MRLs in Tea. The requested was accepted and the following compounds were included in the CCPR priority list for tea crop:

Ethion(2017),Profenophos(2017),Propiconazole,Hexaconazole(2017),L-Cyhalothrin(2017),Fenazaquin (2017),Acetamiprid (2017),Quinalphos (2017),Imidacloprid (2017),Tebuconazole (2017), Spiromesifen (2016, 2017), Dimethoate (2017),Carbendazim (2017), 2,4-D (2017), Bifenthrin (2017), Cyclaniliprole(2017),Pyraclostrobin (2017) and Pyrifluquinazon (2017).The last 3 compounds were requested by the manufacturers.

* 1. ***Data generation / submission/ fixation of MRL in tea***

**1.2.1 India**

A new set of multi-locational supervised field trials were carried out in India to generated additional data on Emamectin Benzoate, Flubendiamide, Imidacloprid, Acetamiprid,Propiconazole, Thiamethoxam, Dimethoate, Hexaconazole, Fenpyroximate, Mancozeb, Bifenthrin, Clothainidin, Fenpyroximate, Profenophos, Hexythiazox, Cypermethrin and L-Cyhalothrinin tea in 2014 and 2015.

The Data for 12 pesticides (Acetamiprid, Ethion, Fenazaquin, Dimethoate, Imidacloprid, Profenofos, Quinalphos, L-Cyhalothrin, 2-4-D, Propiconazole, Hexaconazole, Tebuconazole) currently used and having potential for use in tea were submitted through National Codex Point in Jan 2016 from field trials carried out by Tea Research Institutes at Tocklai & UPASI in India for JMPR evaluation in 2017.

Data on nine pesticides (Bifenthrin, Clothinidin, Fenpropathrin, Fenpyroximate, Hexythiazox, Hexaconazole, Propiconazole, Thiamethoxam and Mancozeb) were also submitted to Food Safety Authority of India in June 2015 for revision/fixation of national MRLs in tea using brew factor for risk assessment.

* + 1. **China**

Supervised field trials as par Good Agricultural Practice (GAP) were carried out in China in 2014 on 12 pesticides, *viz*., tolfenpyrad, indoxacarb, propargite, pyraclostrobin, chlorfluazuron, propiconazole, thiacloprid, imidacloprid, thiamethoxam, acetamiprid, dimethoate and dinotefuran. In 2016, tolfenpyrad has been registed in China. The MRLs is 20 mg/kg.

Great efforts have been made to regulate MRLs for pesticide in Tea in China. Until 2014, MRLs for 28 pesticides in tea have been set up in regulation GB 2763-2014 (National food safety standard-Maximum residue limits for pesticides in food) issued by Ministry of Agriculture of the People’s Republic of China (MOA). In 14th Jul 2015, a draft document GB 2763-2015, including amendments and reversion, were completed and will be issued later. In the new regulation, there will be more than 35 MRLs for pesticide in tea as listed in Table 2.

**Table 2. MRLs for pesticides in tea in China**

|  |  |
| --- | --- |
| **Pesticides** | **China MRL****mg/kg** |
| Acephate | 0.1 |
| Bifenthrin | 5 |
| Buprofezin | 10 |
| Carbendazim | 5 |
| Carbofuran | 0.05 |
| Cartap | 20 |
| L-cyhalothrin,cyhalothrin | 15 |
| Cyfluthrin, beta-cyfluthrin | 1 |
| Cypermethrin,beta-cypermethrin | 20 |
| DDT | 0.2 |
| Demeton | 0.05 |
| Deltamethrin | 10 |
| Diafenthiuron | 5\* |
| Dicofol | 0.2 |
| Difenoconazole | 10 |
| Diflubenzuron | 20 |
| Endosulfan | 10 |
| Ethoprophos | 0.05 |
| Fenazaquin | 15 |
| Fenpropathrin | 5 |
| Fenitrothion | 0.5 |
| Fenvalerate/S-fenvalerate | 0.1 |
| Flucythrinate | 20 |
| Glufosinate-ammonium | 0.5 |
| Glyphosate | 1 |
| Hexachlorocyclohexane HCH) | 0.2 |
| Hexythiazox | 15 |
| Imidaclothiz | 3\* |
| Indoxacarb | 5 |
| Isazofos | 0.01 |
| Isocarbophos | 0.05 |
| Methomyl | 0.2 |
| Omethoate | 0.05 |
| Permethrin | 20 |
| Phosfolan | 0.03 |
| Phoxim | 0.2 |
| Pyridaben | 5 |
| Terbufos | 0.01 |
| *\*Not regulated.* |  |

* + 1. ***Draft Kenya Standard KS 2128: 2015doption of codex standards***

Kenya introduced a *Draft Kenya Standard KS 2128: 2015* in August 2015 with a code of practice in tea. In the Annexure C of this standard, MRLs have been proposed for 14 compounds based on Codex MRLs (Table 3).

**Table 3.List of pesticides and maximum residue limits for tea (Green tea/Black tea)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl No.** | **Pesticides**  | **Kenya****MRL (mg/kg)** | **Codex MRL****(mg/kg)** |
| 1.  | Paraquat | 0.2 | 0.2 |
| 2.  | Methidathion | 0.5 | 0.5 |
| 3.  | Clothianidin | 0.7 | 0.7 |
| 4.  | Fenpropathrin | 2 | 2 |
| 5.  | Chlorpyrifos | 2 | 2 |
| 6.  | Deltamethrin | 5 | 5 |
| 7.  | Propargite | 5 | 5 |
| 8.  | Endosulfan | 10 | 10 |
| 9.  | Etoxazole | 15 | 15 |
| 10.  | Hexythiazox | 15 | 15 |
| 11.  | Cypermethrins (including alpha- & zeta- cypermethrin)  | 15 | 15 |
| 12.  | Permethrin | 20 | 20 |
| 13.  | Thiamethoxam | 20 | 20 |
| 14.  | Bifenthrin | 30 | 30 |

This is a certain move towards harmonization. The information was posted in the FAO-IGG Forum for benefit to members.

1. To update priority list based on new information on Risk assessment, or Replacements or Potential use in Tea.

The priority list of chemicals for the data generation first prepared in 2005 for 24 pesticides has been updated in subsequent sessions. In the 21st Session of the Group held in Bandung, Indonesia on 5-7 Nov 2014, and the Intersessional Meeting of the Group held in Milan on 14-15 Oct 2015, the priority list of compounds in different countries were reviewed in order to remove anomalies and duplication of work and the status was as follows:

**Priority list of chemicals**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pesticides** | **Data Availability**  | **No of trials & Country** | **National MRLs****[MRL (Country)]** | **Data submitted to Codex & date** |
| 1 | 2 | 3 | 4 | 5 |
| Acetamiprid | Yes | 4(Japan)4 (India) 8 (China) | 40 (Jp), 50 (US) | India (2016) |
| Bifenthrin | Yes | 6(Japan)2(India) | 30 (Jp) , 30 (US) | 30 (2011) |
| Buprofezin | Submitted to EU | 6(Japan) | 30 (Jp), 20 (US) | 30 (codex, Green Tea) |
| Chlorfenapyr | Yes  | 2(Japan)10 (China) | 0.01 (US), 40 (Jp) |  |
| **Pesticides** | **Data Availability**  | **No of trials & Country** | **National MRLs****[MRL (Country)]** | **Data submitted to Codex & date** |
| 1 | 2 | 3 | 4 | 5 |
| Chlorfluazuron | Yes | 8 (Sri Lanka)2(Japan) | 10 (Jp), | Not submitted |
| Chlorpyrifos | Yes | 2(Japan)6 (India) | 10 (Jp), | 2 (2005) |
| Chromafenozide | Limited | 2(Japan) | 20 (Jp), |  |
| Clothianidin | Yes  | 3(Japan)2 (India) | 50 (Jp), 70 (US) | 0.7 (2011) |
| Cypermethrin | Yes | 2(Japan)4(India) | 20 (Jp) | 15 (2012) |
| Dimethoate | Limited | 2 (India) | 1 (Jp) | India (2016) |
| EmamectinBenzoate | In progress | 2(Japan)2(India) | 0.5 (Jp) |  |
| Fenpropathrin | Yes | 2(Japan)2 (India) | 25 (Jp), 2 (US), 2(Canada) | 2 (2007) |
| Fenpyroximate | Yes | 2(Japan)2 (India) | 40 (Jp), 20 (US), 0.1 (Argentina) |  |
| Fipronil  | Yes | 8 (Sri Lanka) | 0.002 (Jp) | Not submitted |
| Flubendiamide | Yes | 2(Japan)6 (India) | 50 (Jp) | 50 (2011) |
| Flufenoxuron | Yes | 2(Japan) | 15 (Jp) | (8trials, 2014)  |
| Imidacloprid | Yes  | 2(Japan)8 (Sri Lanka)2 (India) | 10 (Jp) | Evaluation(8trials, 2015) |
| Permethrin | Limited  | 2(Japan) | 20 (Jp) |  |
| Spiromesifen | Yes | 2(Japan) | 30 (Jp), 40 (US) |  |
| Thiacloprid | Yes | 4 (Japan)2 (India)8 (Registrant) | 30 (Jp) |  |
| Thiamethoxam | Yes  | 4 (Japan)4 (India) | 20 (Jp), 20 (US) | 20 (2011) |
| λ-Cyhalothrin | Yes | 2(Japan)4 (India) | 15 (Jp) | India (2016) |
| Indoxycarb | Yes | 8(China) |  | Evaluation 2013 (8trials, China) |
| Dichorvos |  |  | 0.1 (Jp) |  |
| Novaluron | To be generated |  |  |  |
| Abamectin |  |  |  |  |
| Acequinocyl | In progress | 4(Japan)0.5 (Argentina) | 0.5 (Argentina)40 (Jp), |  |
| Chlofentezine |  | 2(Japan) | 20 (Jp) |  |
| Dicofol | Yes | 8(India) | 3(Jp)5 (India)50(US) | 50 (1997) Revoked40 (2011, 5/8) |
| Ethion | Yes | 12(India) | 0.3(Jp), 5 (India) | India (2016) |
| Etoxazole | Yes | 4(Japan) | 15 (Jp), 15 (US)  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pesticides** | **Data Availability**  | **No of trials & Country** | **National MRLs****[MRL (Country)]** | **Data submitted to Codex & date** |
| 1 | 2 | 3 | 4 | 5 |
| Hexythiazox | In progress | Registration for tea deleted (Jp) | 35 (Jp)4 (Argentina) | 15 (2012)Codex MRL is established with the 8 field trials conducted in India. |
| Milbemectin | No | 2(Japan) | 0.7 (Jp) |  |
| Permethrin | Limited | 2(Japan) | 20 (Jp) |  |
| Polysulphide sulphur | Exempted |  |  |  |
| Propargite | Yes | 2(Japan)4(India) | 5 (Jp), 10 (US),10 (India), 1 (Argentina) | 5 (2004) |
| Spiromesifen  | Yes | 2(Japan) | 30 (Jp), 40 (US), 60 (Canada) |  |
| 2,4-D | Limited | 1 (India) |  | India (2016) |
| Diuron | In progress | Not registered in Japan | 1 (Jp) |  |
| Glufosinate-ammonium | Limited | Not registered in Japan | 0.01 (India)0.3 (Jp) |  |
| Glyphosate | Yes | 2 (Japan) | 0.5 (Argentina)1 (US) -- Leaf  7 (US) – Powder1 (Jp) |  |
| MCPA | Yes | 8 (Sri Lanka) |  | Not submitted |
| Metolachlor |  |  |  |  |
| Oxyfluorfen | In progress | 1 (India) |  |  |
| Paraquat | Yes | 8 (Japan)2 (India) | 0.3 (Jp) | 0.2 (2006) |
| Azoxystrobin | Yes | 4 (Japan) | 10 (Jp), 20 (US) |  |
| Bitertanol  | Yes | 8 (Sri Lanka) | 0.1 (Jp) | Not submitted |
| Chlorothalonil |  | 2 (Japan) | 10 (Jp) |  |
| Copper hydroxide | Yes | 2 (India), Not Required in Japan | 150 (India) as copper, Exempted (Japan, US) |  |
| Copper Oxychloride | Yes | 8 (Sri Lanka)4 (Japan)2 (India) | 150 (India) as copper, Exempted (US, Japan) | Joint Application with India |
| Copper oxide | No |  | Exempted (US, Japan) |  |
| Difenoconazol | Limited | 2 (Japan) | 10 (Jp) |  |
| Hexaconazole | Yes | 8 (Sri Lanka)3 (India) | 0.05 (Jp) | India (2016) |
| Propiconazole | Yes | 8 (Sri Lanka)3 (India) | 0.1 (Jp), 4 (Canada) | India (2016) |
| **Pesticides** | **Data Availability**  | **No of trials & Country** | **National MRLs****[MRL (Country)]** | **Data submitted to Codex & date** |
| 1 | 2 | 3 | 4 | 5 |
| Pyraclostrobin |  | 8 (Sri Lanka)2 (Japan) | 5 (Jp) | Not submitted |
| Tebuconazole | Yes | 4 (Sri Lanka)2 (Japan) | 50 (Jp) | India (2016) |
| Thiophanate-methyl | To be done | 2 (Japan) | 7 (Jp) |  |
| Trifloxystrobin | To be done | 3 (Japan) | 5 (Jp) |  |
| Carboxim | To be done |  |  |  |
| Tolfenpyrad | Available | 8(China) | 20 (Jp), 30 (US) | 30 (Codex, Green Tea) |

Note: Information on whether sufficient field trial data available are to be provided to the WG.

Requests were sent to member countries seeking information on the status of field trials/data generation/data submission for the compounds in the priority list in order to prepare a list and a timetable for those chemicals that are planned for submission to Codex. The feedback received from members would be discussed in the Intersessional meeting at Milan (14-15 Oct 2016) and based on which a time table for data submission would be provided to the IGG/Tea Secretariat for advance notice to Codex. As there are a number of trial data already available in different member countries, there is scope of pooling the data to obtain the required number of trials for MRL fixation in tea by simultaneous submissions for at least some compounds as evident from the feedback received from a few members as given below:

Acetamiprid: 8 trials data [Scope for submission by Japan, India & China]
Hexaconazole: 11 trials data [Scope for submission by Sri Lanka & India]
Propiconazole: 11 trials data [Scope for submission by Sri Lanka & India]
Chlorfluazuron: 10 trials data [Scope for submission by Sri Lanka & Japan]
Fipronil : 8 trials data [Scope for submission by Sri Lanka]

MCPA: 8 trials data [Scope for submission by Sri Lanka]
Ethion: 12 trials data [Scope for submission by India]
λ-Cyhalothrin: 6 trials data available. Needs 2 more.
Buprofezin: 6 trials data available. Needs 2 more. The data package submitted to the EU did not meet the data requirements for Europe.
Fenpyroximate: 4 trials data available, Needs 4 more.

Feedback was sought seeking updates on the priority list through IGG Forum on 8 May 2016.

(3) To share information on consuming countries on MRL restrictions.

Consuming country US has restriction for Ethion, Chlorpyriphos, Fenvalerate Profenofos, DDT, Methidathion, Triazophos, Lindane, Tetradifon and Triadimethon in their Do Not Use list.

Canada has consulted with PMRA on the US Tea Association's Do Not Use list and the PMRA has taken a very pragmatic approach indicating that any of the compounds could have import MRLs established provided sufficient data were submitted for review.  Practically though, it is highly unlikely that some of the compounds listed would be profitable enough to warrant the generation of additional data.  Consequently it is unlikely that some of the compounds on the US list would obtain import MRLs in Canada.  Please see the attahced summary document for a full explanation of the situation in Canada.

Restrictions in the application of imidacloprid and acetamiprid in China has also been a major shift in pesticide use in tea. Imidacloprid and acetamiprid were advised not to be used in tea plantation in China due to high water solubility. In the following years, measures to decrease the amount of imidacloprid and acetamiprid applied in tea plantation would increase until zero application. Recently, indoxacarb was selected to substitute neonicotinoids in tea in China and the pesticide was registered in 2016.

(4) To assess status & development of required infrastructure & new methods to cope with changing situations & cost.

Most of the pesticides in the priority list are amenable to analysis by LC or GC\_MS/MS and the conventional techniques are of little use. Therefore, required infrastructure for data generation with triple quad LC-MS/MS and GC-MS/MS based methods needs to be established. Source of funding needs to be explored as these equipment are very expensive.

(5) Communication plan for quick information exchange and advance notification for simultaneous data submission by members & seeking manufacturers support and to negate adverse publicity.

The IGG forum provides a scope for use by members for quick information exchange as required for updation of priority list, advance notification by members for data submission and for seeking specific support from stakeholders and to negate adverse publicity.

(6) Data submission to include brew factor based risk assessment for all teas traded globally except Matcha Tea.

Data submitted by India in Dec 2016 on Acetamiprid, Ethion, Fenazaquin, Dimethoate, Imidacloprid, Profenofos, Quinalphos, L-Cyhalothrin, 2-4-D, Propiconazole, Hexaconazole, Tebuconazole in tea for JMPR evaluation were with brew factor based risk assessment.

Data submitted by China also used this approach of risk assessment for Chlorfenapyr, Indoxacarb and Tolfenpyrad as shown below:

Results of the chlorfenapyr, indoxacarb and tolfenpyrad from field trials in China

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Pesticides | HL50 on fresh tea leaves (day)  | Processing factor (%) | Brew factor  | Water solubility(mg/L) | Recommended MRL(mg/kg) | PHI(day) |
| Chlorfenapyr | 5.6 | 54.0 | 0.15 | 0.12 | 20 | 7 |
| Indoxacarb | 2.3 | 34.5 | 6.20 | 0.02  | 5(China,CAC,EU) | 10 |
| Tolfenpyrad | 3.6 | 41.6 | 0.20 | 0.09 | 20 | 5 |

(7) To share available information on anthraquinone, nicotine and other contaminants and to carryout a global study to generate data on occurrence in tea. India, Sri Lanka, China, Kenya, Japan, UK and Germany agreed to participate in this collaborative study.

In the last meeting it was decided to share information on anthraquinone as it was detected in many tea samples from a number of countries. A UKTIA (UK-Tea and Infusion Association) and TRA (Tea Research Association, Tocklai, India) joint study has been completed in Dec 2015. A GC-MS/MS based suitable test method for determination of anthraquinone in tea was developed at TLabs TRA, India in March 2015 with an LOQ of 0.02 mg/kg. The method was validated with an EU PT sample provided by THIE (erstwhile ETC) Chair Dr Thomas Henn. Simultaneous work on literature search showed ubiquitous presence of anthraquinone in the environment. The results of this joint study have been disseminated through the Tea Boards. A second UKTIA sponsored study is planned for 2016 with the willing participation of producing countries.

The issue of anthraquinone also re-emphasized the WGs identified action plan to assess the status and development of required infrastructure and new methods to cope with changing situations and the associated cost particularly in the producing countries.

(8) Explore a potential representation in CODEX for tea to give agreed position a voice.

Members may consider participation of the WG-on MRLs in CCPR meetings. Needs discussion on the benefits from the inputs provided by Canada.

(9) Share information on development of pest resistance.

Information on development pest resistance in tea would help in better management of pest in the producing countries and will also help in revising the priority list. The members may share such information preferably through the FAO-IGG on Tea Forum.

(10) The policy document entitled “Guidance Document on Risk Assessment Using Brew Factor For Fixation of MRLs of Pesticides in Tea” will be submitted to the CCPR and JMPR for reference.

The policy document entitled “Guidance Document on Risk Assessment Using Brew Factor For Fixation of MRLs of Pesticides in Tea” was submitted and presented in the 48 session of the CCPR at China held on 25-30 April, 2016. [<http://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FMeetings%252FCX-718-48%252FCRD%252Fpr48_crd21x.pdf>]

**Progress report of FAO-IGG/Tea Working Group on MRL in Tea Brew**

In the objectives and development of the provisional agenda sent from the IGG secretariat one point included was as follows: The Working Group on MRLs in the Brew be dissolved after the submission and endorsement of the policy document by CCPR.

Hence, the WG need to prepare a policy document outlining the methodology and other technical requirements to enable regulators of the CCPR to accept residues in the brew as the basis for risk assessment. This document would need to be discussed and endorsed for submission to the CCPR.

1. **Policy document:**

The policy document entitled “ Guidance document on risk assessment using brew factor for fixation of MRLs of pesticides in Tea” was prepared by Indian and Chinese delegations, WG on MRL and Tea Brew of FAO-IGG on Tea with comments from USA , Japan and Sri Lanka. The document was circulated to members and regulators for comment. It was discussed at the Inter-sessional meeting at Milan held on Oct 2015 and finalised in December 2015.

The policy document was submitted to Codex and was presented at the 48th CCPR meeting held in Chongqing, China on 25-30 April 2016. Excerpts from the report of the CCPR 48th session presented below:

“196. The Delegation of India recalled that CCPR44 (2012) has encouraged coutries to submit relevant data/information on brewing factors and standard method to JMPR for consideration in estimation of MRLs for pesticides in tea23. Inida, explained that following the CCPR’s decision, the IGG in 2015 had endorsed a guidance document (CRD21), jointly prepared by India and China, which aimed at providing guidance on the establishment of MRLs for pesticides in dry tea leaves using brew factors for risk assessment.

197. The JMPR Secretariat informed the Committee that the use of available tea brew studies to estimate processing factors was part of the current JMPR procedures for the establishment of MRLs for dry tea leaves and encouraged countries when submitting their trials to also include tea brew studies.”

The working group on MRLs in the Tea Brew has thus completed its commitment.

**Future Plan**

1. Continue data generation and submission through National Codex points for MRL fixation.

2. Submit data on brew studies for brew factor based risk assessment.

3. Communication plan for quick information dissemination.

4. Update priority list as necessary.

5. Assess required infrastructure for data generation & conformance monitoring. Explore funding.

6. To share available information on anthraquinone and other contaminants and carry out a global study on anthraquinone.

7. Explore a potential representation in CODEX for tea to give agreed position a voice. Consider participation of FAO-IGG on Tea WG-on MRLs in CCPR meetings.

8. Share information on development of pest resistance.