Control of pesticide use and
Maximum Residue Limits (MRLs) of pesticides

Integrated Pest Management (IPM) is an established part of Good Agricultural Practices (GAP). An overview of IPM applied to coffee production is provided elsewhere in this training tool (see: ‘Integrated Pest Management (IPM) in coffee production’ [.pdf], found in the Support Documentation area of this Section). Use of chemical pesticides is one aspect of the IPM approach. Apart from the use of these chemicals in production, pesticides may also be used during storage and transportation stages of the ‘coffee chain’.

A series of controls are usually applied at national level to ensure the safe use of pesticides, thus protecting the health of agricultural workers, preventing environmental contamination and protecting consumers from exposure to unacceptably high levels of these chemical residues in foods. These controls generally include the establishment of lists of pesticides that are permitted for use in the country. Regulations may also govern how the pesticides are labelled, packaged, stored, sold, used and disposed of. Of particular interest to food safety regulators are the maximum residue limits (MRLs) of these chemicals that are allowed in foods.

Who provides international guidance on pesticide MRLs?

The Codex Committee on Pesticide Residues (CCPR) is responsible for establishing maximum limits for pesticide residues in specific food items or in groups of food. As the decisions of this committee are based on scientific advice provided by the Joint FAO/WHO Meeting on Pesticide Residues (JMPR), the CCPR is also responsible for preparing priority lists of pesticides for evaluation by this independent expert panel. Reports of the CCPR and their programme of work can be found on the Codex Alimentarius [www] web site.

The JMPR proposes MRLs for pesticides in specific commodities based primarily on residue levels in supervised field trials carried out under a range of conditions and in accordance to Good Agricultural Practice. JMPR also carries out toxicological evaluations of pesticide residues in a series of test animals in order to find the highest dose level at which there is no adverse toxicological effect in the most sensitive test species. By applying a series of ‘safety factors’ the expert group then estimates an Acceptable Daily Intake (ADI), which is the amount of the residue expressed in mg/kg of body weight, which a person can consume on a daily basis over a lifetime without any added risk to health. Theoretical maximum intakes are then calculated using the MRL value and consumption data from the regional diets to ensure that there is no risk that consumers could exceed the ADI.

On the basis of their evaluation, JMPR recommends a MRL to the CCPR which is discussed by country representatives at the regular sessions of this technical committee. Once the CCPR reaches agreement, the proposed MRL is discussed again at the Codex Alimentarius Commission where it is adopted as an international recommendation if all member countries agree. Pesticide MRLs are periodically re-evaluated. Participation in CCPR and CAC sessions is open to all...
Codex member countries, which empowers all countries to influence the international regulations. JMPR makes open requests to all countries to submit data for consideration by the panel of experts in their evaluation, and has published minimum data quality requirements to facilitate broad input into the process. The reports of their evaluations are published and can be found on the following websites: [JMPR at FAO](www) and [JMPR at WHO](www).

To date CAC has established over 2,400 pesticide MRLs. These can be found in the Codex pesticide MRL database available on the Codex website.

**Can pesticide residues in foods create problems for trade?**

Nationally established MRLs for pesticides are based on national conditions and practices. It is possible, therefore, for different countries to set different MRLs for the same pesticide/food commodity combination. It is also possible that a pesticide authorised in one country is not authorized for use in another where it is not considered necessary for pest control. These factors can result in unjustified barriers to trade. The SPS Agreement seeks to eliminate such barriers, provided that there is no reduction in the level of consumer health protection. This agreement explicitly recognises Codex standards, guidelines and recommendations regarding pesticide residues and further states that any sanitary measures consistent with these standards are presumed to be consistent with the relevant provisions of the Agreement. Codex MRLs, when they exist, are therefore of singular significance in international trade. This underlines the importance of developing country participation in the work of CCPR.

It should be clearly understood that countries can adopt more stringent MRLs than those of Codex. In such cases, however, the country should justify their measure on the basis of an adequate risk assessment. Furthermore, there are many pesticide/food combinations for which there are no established Codex MRLs. There is ongoing discussion within the CCPR on prioritising work so as best satisfy the requests of member countries for establishment of new Codex MRLs.

**Pesticides used in coffee production and storage:**

As outlined in the preceding section, national regulations and guidance concerning the use of pesticides depends on local conditions. It is logical, therefore to find that different pesticides are approved for use in the various coffee-producing countries.¹ Even though the use of fungicides and pesticides at prescribed points in the coffee production cycle are a part of good agricultural practice, financial constraints faced by smallholders often preclude their use in the smallholder sector. Furthermore, widespread use of IPM, including biological control, in most coffee producing countries reduces reliance on pesticides in coffee production.

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See also the Brazilian information system on agri-chemicals (SIA - Sistema de Informações sobre Agrotóxicos): [http://www4.anvisa.gov.br/AGROSIA/asp/frm_pesquisa_agrotoxico.asp](http://www4.anvisa.gov.br/AGROSIA/asp/frm_pesquisa_agrotoxico.asp)
Though there are a few insect problems in coffee storage, particularly the ‘coffee weevil’ (*Araecerus fasciculatus*), these can be controlled by effective drying and good storage practices, including routine cleaning. Pests, such as birds and rodents, that are major problems for other foods in storage, do not normally feed on dried coffee. The use of chemicals in coffee storage, aside from fumigation required by some importing nations, is rare. When fumigation is carried out, it must be done according to established procedures to ensure freedom from unacceptable levels of residues.

For the reasons outlined in the two preceding paragraphs, coffee is not a crop that is associated with problems of unacceptable pesticide residues, although there is at least one recent report of an importing country finding unacceptable pesticide residues in a coffee consignment.

Searching the Codex MRL database shows that there are presently 17 chemicals for which Codex MRLs have been established. Various coffee-importing countries have established national MRLs for pesticides in coffee beans. Japan has prescribed national MRLs for 21 chemicals in coffee while the US Environmental Protection Agency (EPA) has established limits for 94 chemicals in coffee beans.

Presently, there are no harmonised EU MRLs for coffee: each of the EU-member countries regulates this individually. This situation may be expected to change soon, however, as there is an ongoing programme of harmonisation of pesticide MRLs within this regional grouping\(^2\). The use of pesticides in producing countries for which MRLs are not established by major importing countries has the potential to create problems in the trade of coffee.

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\(^2\) Information on EU harmonized Maximum Residue Levels (MRLs) can be found at: http://europa.eu.int/comm/food/index_en.htm