



**PESTICIDE MAXIMUM RESIDUE LIMITS IN MUNG BEAN ESTABLISHED BY CODEX,  
 ASEAN, PHILIPPINES, AND SELECTED IMPORTING COUNTRIES**

*Kriszia Ann U. Decena, Karen Kristine Roscom, PhD, Mary Grace M. Mandigma,*

*Melissa L. Astillero and Edna Lynn C. Floresca*

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**Executive Summary**

Mung bean production is the most important food legume in the Philippines in terms of agricultural area and value of production (Philippine Center for Postharvest Development and Mechanization [PhilMech], 2021). It is an excellent source of protein (24.8 %) and other nutrients, including fat (1 %), fiber (3.5-4.5%), ash (4.5-5.5%), carbohydrates (62-65%), antioxidants, vitamins (A, B1, B2, B3, B6, B9, C, E, K) and minerals (sodium, phosphorus, potassium, magnetism, copper, zinc) (Makmudova & Ergasheva, 2021). However, mung bean production is challenged and threatened by pest infestation in the field and storage (Makmudova & Ergasheva, 2021). As a response, most farmers excessively use pesticides such as chlorpyrifos (Parween et al., 2016) to protect their crops from pests such as thrips bruchids, and bean flies (Asian Vegetable Research and Development Center [AVRDC], 2016; Gentry, 2010; Yasmin et al., 2019) and maintain productivity (Aung & Lee, 2021). This practice resulted in residues above the Maximum Residue Limit (MRL), posing food safety risks to consumers (World Health Organization [WHO], 2022). A Philippine National Standard (PNS) on MRLs of Pesticides for Selected Local Crops (PNS/BAFS 265:2018), namely coffee beans, eggplant, garlic, onion, tomato, string beans, and bitter melon has been established.



However, none specific to mung bean is included in the PNS. Therefore, establishing a PNS on pesticide MRL for mung bean is necessary to ensure consumer food safety and facilitate trade.

The development of PNS was requested by the Department of Agriculture Regional Field Office II, Integrated Laboratory Division (DA-RFO II, ILD) in 2021 to support their efforts in promoting pesticide-safe vegetables. Mung bean is a prime candidate for exportation, and conformance with pesticide MRL established by international standards is considered of utmost importance (DA-RFO II, ILD *Accomplished Project Document Form*).

This study aimed to identify the pesticide MRL for mung bean established by the Codex Alimentarius Commission (Codex) as the benchmark standard and compare it with those established by the Association of Southeast Asian Nations (ASEAN), the Department of Agriculture-Fertilizer and Pesticide Authority (DA-FPA), and selected importing countries, namely, the United States of America (USA), European Union (EU), China, Japan, and Indonesia. The data derived from the study will serve as a basis for the development of PNS on MRL of Pesticides in Mung Bean. Secondary data was collected from online pesticide MRL databases, regional and international standards, government websites, and Codex.

The major findings of this study are as follows:

1. There were 11 combined pesticide active ingredients with established MRL from Codex, DA-FPA, USA, China, and Indonesia, specific for mung bean. Codex established MRL for only one pesticide active ingredient (indoxacarb), which the MRL of China and Indonesia were harmonized with. However, indoxacarb was not registered in DA-FPA for mung bean in the Philippines. Ten pesticide active ingredients were registered in DA-FPA (benomyl, BPMC + chlorpyrifos, beta-cypermethrin, lambda-cyhalothrin, mancozeb, methomyl, MIPC, MIPCIN,

profenofos, triadimefon). However, it had no corresponding pesticide MRL in Codex. Only four pesticide active ingredients registered in DA-FPA (benomyl, beta-cypermethrin, mancozeb, and methomyl) had MRL values since the DA-FPA could no longer retrieve old files or records of the other six (BPMC + chlorpyrifos, lambda-cyhalothrin, MIPC, MIPCIN, profenofos, triadimefon) registered pesticide active ingredients for mung bean.

- There were 55 combined pesticide active ingredients with established MRL from Codex, ASEAN, DA-FPA, EU, and Japan for the beans (dry) category, which covered mung beans. Thirty-two pesticide active ingredients with MRL established by Codex under the beans (dry) category were not registered in the Philippines. Six pesticide active ingredients with MRL (carbendazim, cycloxydim, iprodione, malathion, methomyl, and permethrin) in ASEAN were harmonized with Codex. The alignment of MRL of two pesticide active ingredients (malathion and permethrin) registered in DA-FPA with Codex cannot be determined since DA-FPA had no record of the MRL value. Only nine out of 23 (39%) of pesticide active ingredients registered in DA-FPA (captan, chlorpyrifos, deltamethrin, fenitrothion, fenvalerate, linuron, propineb, spinosad, and triforine) had MRL values provided. Two pesticide active ingredients with MRL (deltamethrin and spinosad) in DA FPA were harmonized with EU MRL. Three pesticide active ingredients (captan, fenvalerate, linuron) registered in DA-FPA were harmonized with Japan MRL. Seven pesticide active ingredients (captan, chlorpyrifos, fenitrothion, fenvalerate, linuron, propineb, and triforine) in DA-FPA were more lenient than EU MRL. One pesticide active ingredient (spinosad) registered in DA-FPA was more lenient than the MRL value of Japan. Three pesticide active ingredients (chlorpyrifos, deltamethrin, and fenitrothion) registered in DA-FPA were stricter than in Japan MRL.

The major recommendations of the study are as follows:

1. BAFS to adopt the Codex pesticide MRL (indoxacarb) specified for mung bean, with due consideration to consumer safety of Filipinos to be consistent with the obligations under the World Trade Organization (WTO) – Sanitary and Phytosanitary (SPS) Agreement.
2. DA-FPA may consider re-evaluation of the pesticide risk assessment conducted for the ten pesticide active ingredients registered for mung bean and 21 pesticide active ingredients registered for beans (dry) that had MRL value but had no corresponding MRL in Codex.
3. DA-FPA to provide the proposed MRL for the ten pesticide active ingredients registered for mung bean and 14 pesticide active ingredients registered for the beans (dry) category.
4. Consider expanding the pesticide MRL not only for mung bean but also to cover crop groups per Codex (i.e., beans [dry] category) to where mung bean falls under and adopt the MRL set by Codex.

