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**Occurrence of chemical contaminants in Peruvian produce: a food safety perspective**

**Table S1**

List of banned pesticides in Peru. Information according to the National Service of Agrarian Health agency [1].

| Pesticide Classification | Chemical Group and Active Ingredient |
|--------------------------|--------------------------------------|
| Insecticide              | Carbamate                            |
|                          | Aldicarb                             |
|                          | Organochloride                       |
|                          | Aldrin                               |
|                          | Dieldrin                             |
|                          | Endrin                               |
|                          | DDT                                  |
|                          | HCH                                  |
|                          | Camphechlor/Toxaphene                |
|                          | Endosulfan                           |
|                          | Heptachlor                           |
|                          | 1,2-Dichloroethane                   |
|                          | Chlorobenzilate                      |
|                          | Pentachlorophenol                    |
|                          | Chlordane                            |
|                          | <i>Chlordimeform</i>                 |
|                          | <i>Lindane</i>                       |
|                          | <i>Mirex</i>                         |
|                          | Organophosphate                      |
|                          | Diethyl parathion                    |
|                          | Methamidophos                        |
|                          | Methyl parathion                     |
|                          | Monocrotophos                        |
|                          | Phosphamidon                         |
| Herbicide                | Inorganic                            |
|                          | Lead arsenate                        |
|                          | 2,4,5-T                              |
|                          | Dinitro- <i>ortho</i> -cresol (DNOC) |
|                          | Dinoseb                              |
| Fungicide                | Ethylene dibromide                   |
|                          | Binapacryl                           |
|                          | Captafol                             |
|                          | Hexachlorobenzene                    |
| Rodenticide              | Organomercurial compounds            |
|                          | Fluoroacetamide                      |

Table S2

List of pesticides commonly used in Peru.

| Pesticide Classification | Chemical Group and Active Ingredient | EIQ Values <sup>1</sup> | WHO Classification Level <sup>2</sup> | No. of Countries Where Banned <sup>3</sup> | Banned in Peru | Crop Use <sup>4</sup>                           |
|--------------------------|--------------------------------------|-------------------------|---------------------------------------|--|----------------|---|
| Insecticide              | Carbamate                            |                         |                                       |  |                |   |
|                          | Carbaryl                             | 22.73                   | II                                    | 35   | No             | Potato, corn, bean, cotton, sorghum             |
|                          | Carbofuran                           | 50.67                   | Ib                                    | 63   | No             | Tomato, potato, banana/plantain, pumpkin        |
|                          | Organophosphate                      |                         |                                       |  |                |   |
|                          | Methamidophos                        | 36.83                   | Ib                                    | 83   | Yes            | Potato, bean, rice, tomato                      |
|                          | Diazinon                             | 44.03                   | II                                    | 32   | No             | Onion, strawberry, corn, pineapple, alfalfa     |
|                          | Dimethoate                           | 33.49                   | II                                    | 4  | No             | Onion, alfalfa, avocado, cotton, tomato         |
|                          | Methyl Parathion                     | 35.22                   | Ia                                    | 61   | Yes            | NA  |
|                          | Fenitrothion                         | NA                      | II                                    | 28   | No             | Alfalfa, cotton, rice, citrics, orange, corn    |
|                          | Chlorpyrifos                         | 26.90                   | II                                    | 4  | No             | Tomato, onion, corn, asparagus, pea             |
|                          | Disulfoton                           | 101.8                   | Ia                                    | 37   | No             | Potato  |
|                          | Monocrotophos                        | NA                      | Ib                                    | 112  | Yes            | NA  |
|                          | Malathion                            | 23.83                   | III                                   | 2  | No             | Alfalfa, onion, garlic, rice, mango             |
|                          | Trichlorphon                         | 20.17                   | II                                    | 52   | No             | Corn, sugar cane, potato, chirimoya, peach      |
|                          | Prophenofos                          | 59.53                   | II                                    | 29   | No             | Potato, onion, squash, corn                     |
|                          | Azinphos methyl                      | 53.05                   | Ib                                    | 80   | No             | NA  |
|                          | Pyrethroid                           |                         |                                       |  |                |   |
|                          | Cypermethrin                         | 36.35                   | II                                    | 28   | No             | Alfalfa, potato, cotton, asparagus, tomato      |
|                          | Deltamethrin                         | 26.38                   | II                                    | NA   | No             | Onion, cabbage, cauliflower, soy, tobacco       |
|                          | Permethrin                           | 29.33                   | II                                    | 29   | No             | Alfalfa, artichoke, asparagus, onion, tomato    |
|                          | Lambda-Cyhalothrin *                 | 47.22                   | II                                    | 28   | No             | Potato, cotton, corn, tomato                    |
| Herbicide                | Paraquat                             | 24.73                   | II                                    | 46   | No             | Artichoke, banana, cacao, coffee, sugar cane    |
|                          | Diuron                               | 26.47                   | III                                   | 1  | No             | Cotton, coffee, pineapple, citrus fruits, apple |
|                          | Butachlor                            | NA                      | III                                   | 31   | No             | Rice  |
| Fungicide                | Tebuconazole                         | 40.33                   | II                                    | 1  | No             | Asparagus, potato, rice, apple, mango           |
|                          | Trifloxystrobin                      | 29.78                   | U                                     | NA   | No             | Asparagus, peach, strawberry, celery, peppers   |

|                |       |     |    |    |   |
|----------------|-------|-----|----|----|---|
| Benomyl        | 30.24 | U   | 34 | No | Celery, tomato, citrus fruits, rice, apple    |
| Penconazole    | NA    | III | NA | No | Peppers, mango, watermelon, pea, pumpkin      |
| Metiram        | 40.61 | U   | NA | No | Celery, potato, rice, onion, beans            |
| Triadimenol    | 26.96 | II  | NA | No | Melons, barley, pear, wheat, tobacco          |
| Propiconazole  | 31.63 | II  | 28 | No | Celery, barley, rice, banana/plantain, coffee |
| Copper sulfate | 61.90 | II  | NA | No | Onion, melons, pepper, garlic                 |

<sup>1</sup> Environmental impact quotient (EIQ). The higher the number, the greater the impact with regard to the environment or human health. Retrieved from New York State Integrated Pest Management program from Cornell University [2]. <sup>2</sup> Toxicity classes defined by the World Health Organization: Class Ia, extremely hazardous; Class Ib, highly hazardous; Class II, moderately hazardous; Class III, slightly hazardous; U, undefined. <sup>3</sup> According to the Pesticide Action Network International [3]. <sup>4</sup> Data according to the National Service of Agrarian Health agency [4]. \* Organic pesticide. NA, information not available.

## References

1. Servicio Nacional de Sanidad Agraria (SENASA). *Plaguicidas Agrícolas Restringidos y Prohibidos en el Perú*; SENASA: Lima, Peru, 2015. Available online: <https://www.senasa.gob.pe/senasa/plaguicidas-restringidos-y-prohibidos-en-el-peru/> (accessed on 15 March 2021).
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3. Pesticide Action Network International. PAN International Consolidated list of Banned Pesticides. Available online: <http://pan-international.org/pan-international-consolidated-list-of-banned-pesticides/> (accessed on 15 March 2021).
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