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Pesticide residues in fruits and vegetables of the Argentine domestic market: occurrence and quality

Tomás M. Mac Loughlin, Ma.Leticia Peluso, Ma.Agustina Etchegoyen, Lucas L. Alonso, Ma. Cecilia de Castro, Ma.Cecilia Percudani, Damián J.G. Marino



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1 **Title** Pesticide residues in fruits and vegetables of the Argentine domestic market: occurrence
2 and quality

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4 **Authors** Tomás M. Mac Loughlin ^{a,b,c,Eq}, Ma. Leticia Peluso ^{a,b,c,Eq}, Ma. Agustina Etchegoyen
5 ^{a,b,c}, Lucas L. Alonso ^{a,b,c}, Ma. Cecilia de Castro ^c, Ma. Cecilia Percudani ^c, Damián J. G. Marino ^{a,b,c,*}

6
7 ^a Centro de Investigaciones del Medio Ambiente (CIM), Facultad de Ciencias Exactas, Universidad
8 Nacional de La Plata, La Plata, Buenos Aires, Argentina

9 ^b Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Buenos Aires, Argentina

10 ^c Espacio Multidisciplinario de Interacción Socioambiental (EMISA), Facultad de Ciencias Exactas,
11 Universidad Nacional de La Plata, La Plata, Buenos Aires, Argentina

12
13 ^{Eq} Equal contribution

14
15 * Corresponding author damianm@quimica.unlp.edu.ar

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17 **Abstract** The presence of pesticides in fruits and vegetables has been a growing concern
18 in Argentina. Only three of the major marketplaces there have the necessary infrastructure to
19 determine pesticide residues in produce. The aim of this study was to investigate the presence of
20 such residues in nationally produced fruits and vegetables for domestic consumption in order to
21 evaluate the present state of the market. A total of 135 of the most widely consumed fruits and
22 vegetables were analyzed for 35 pesticides. The analyses utilized a *QuEChERS*[™] multiresidue-
23 extraction kit along with tandem gas chromatography–mass spectrometry. The results were
24 evaluated according to maximum residue limits (MRLs) for each commodity and pesticide
25 according to national regulation. Pesticides were detected in 65% of the total samples, in 44% of
26 the positive samples at or below the MRLs, and in 56% above the MRLs. Oranges had the highest
27 pesticide concentration detected, but carrots had the highest frequency of noncompliance
28 among the produce items sampled. Five pesticides were detected at frequencies above 10%, the
29 highest being chlorpyrifos in 25.9% of the total samples. In other countries, the percentage of
30 samples above the MRL is 4 times lower than our findings, and 7 times lower for exported
31 products. An implementation of programs designed to facilitate awareness, capacitation, and
32 monitoring is urgently recommended.

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