

Figure S1 General microscopic identification of strains isolated from solid samples in aquaponic farms in Guadalajara, JAL., Mexico: (a) strain gram negative (micrococcus); (b) strain gram positive (micrococcus); and (c) strain gram positive (coccus).

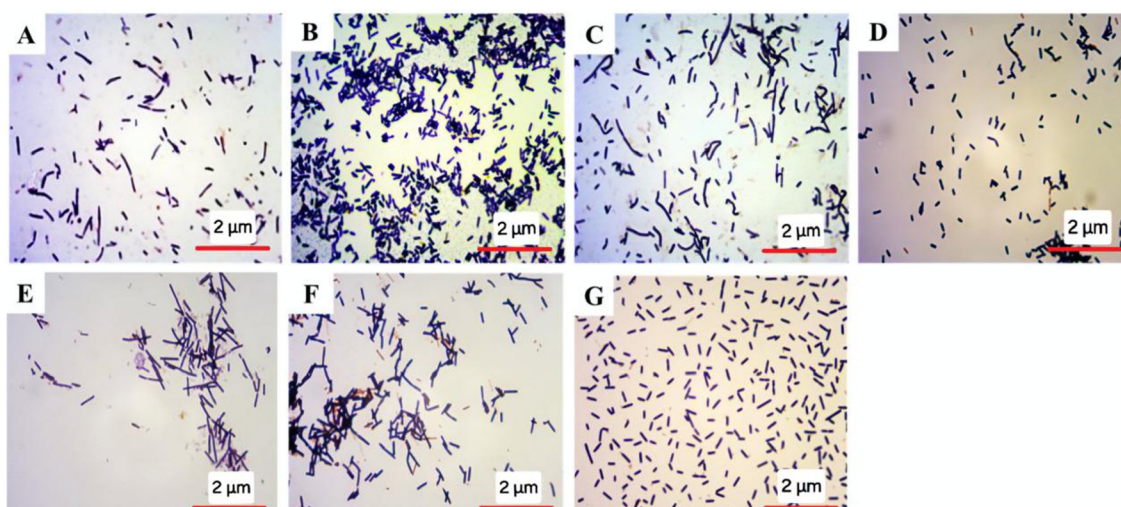


Figure S2 Microscopic identification of *Lysinibacillus* strains isolated from solid samples in aquaponic farms in Guadalajara, JAL., Mexico: A. Sp-1; B. Sp-2; C. Sp-3; D. Sp-4; E. Sp-5; F. Sp-6; and G. Sp-7.

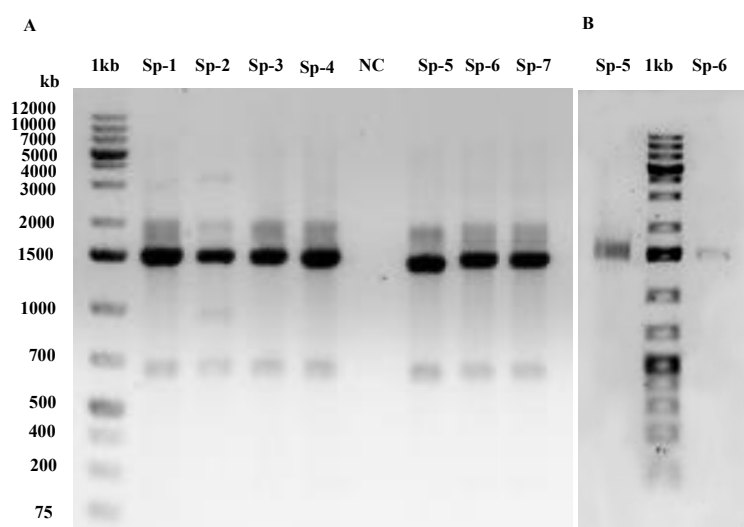


Figure S3. Electrophoresis of 1.2% agarose gel. (a) PCR samples of the 16S rRNA gene, amplified at 60.7 °C alignment temperature. (b) PCR product (1500 bp fragment) purified with Wizard® clean-up PCR protocol in each of the strains.

Table S1. Morphological characterization and molecular identification of the strains isolated from the samples of solid waste in an aquaponic system obtained from the commercial farm in Guadalajara, JAL., Mexico. Strain Sp-2 and Sp-5 were isolated from the hydro-cyclone, and the rest were isolated from the solids in the hydroponic unit of the system. The analysis of the partial sequences was obtained from the 16S rRNA gene in the GenBank database (BLAST).

Strain	Morphological characteristics	Genus	Identity (%)
Sp-1	Uniform growth cream color with wavy morphology and convex surface.	<i>Lysinibacillus mangiferihumi</i>	87
Sp-2	Cream colored colonies, wavy morphology, filamentous and convex surface.	<i>Lysinibacillus contaminans</i>	88
Sp-3	Brown color, irregular and convex morphology.	<i>Lysinibacillus mangiferihumi</i>	93
Sp-4	Cream color of wavy morphology with flat surface.	<i>Lysinibacillus fusiformis</i>	88
Sp-5	Cream color, with lobed morphology and convex surface.	<i>Lysinibacillus mangiferihumi</i>	90
Sp-6	Brown color, rhizoidal morphology.	<i>Lysinibacillus mangiferihumi</i>	90
Sp-7	Brown color, irregular morphology.	<i>Lysinibacillus mangiferihumi</i>	92

Table S2. Final concentration of minerals (macro and micronutrients) in the solid waste obtained from a tilapia culture in aquaponic systems, fed with commercial AquaNu3® concentrate at 40% crude protein.

Inoculation Strain	Temperature °C	Oxygen rpm	K	S	Ca	P	Mg mg g ⁻¹	Fe	Zn	Cu	Mn	Mo
Control	24	0	6.7	5.9	37.0	82.8	539.2	4.3	3.7	0.2	0.6	0.06
		200	7.2	9.2	21.6	79.8	300.8	3.5	4.1	0.2	0.5	0.04
	37	0	6.4	4.7	37.4	87.2	747.3	4.0	3.1	0.2	0.5	0.04
		200	7.8	5.1	22.1	76.0	232.9	3.2	3.8	0.2	0.5	0.10
Sp-5	24	0	5.7	8.3	46.9	91.8	717.5	4.7	3.3	0.2	0.6	0.04
		200	7.0	5.8	40.1	96.1	927.3	3.3	3.3	0.2	0.6	0.05
	37	0	6.9	8.1	47.1	90.6	790.0	5.0	3.4	0.2	0.6	0.01
		200	7.6	6.9	27.4	82.2	434.7	2.9	4.1	0.2	0.6	0.08
Sp-6	24	0	6.0	6.4	42.8	88.8	733.1	4.1	3.3	0.2	0.6	0.10
		200	7.4	8.4	41.7	78.8	799.3	3.9	3.7	0.2	0.7	0.05
	37	0	6.3	7.7	35.5	88.6	435.1	4.5	3.6	0.2	0.6	0.04
		200	6.5	7.3	35.0	75.8	538.3	3.3	3.5	0.2	0.6	0.09